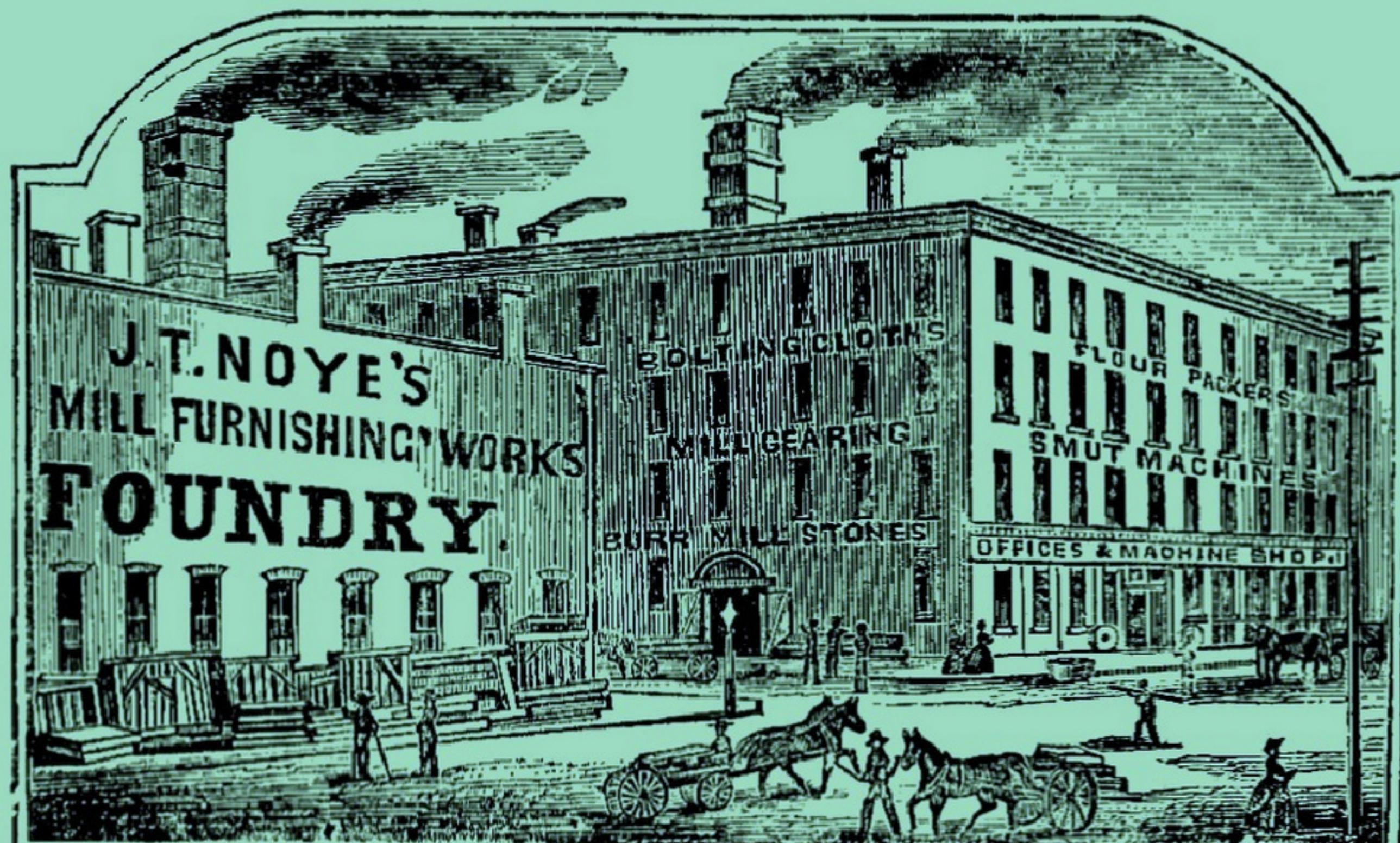


CATALOGUE  
OF  
GEARING AND PULLEY PATTERNS  
IN  
JOHN T. NOYE & SONS'  
BUFFALO MILL FURNISHING  
ESTABLISHMENT.



*Office and Manufactory, Washington Street Bridge,  
BUFFALO, N. Y.*

1880.

MILL CASTINGS,  
BURR MILL STONES, ROLLER MILLS,

BOLTING CLOTHS AND OTHER MILL FINDINGS.

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# CATALOGUE OF PATTERNS

IN

JOHN T. NOYE & SONS'

BUFFALO MILL FURNISHING

ESTABLISHMENT.

For the Year 1880.

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# Rules for Calculating the Speed of Gears or Pulleys.

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In calculating for tooth wheels, multiply or divide (as the case may be) by the number of teeth. But in calculating for Pulleys, multiply or divide by their diameter or circumference in inches.

It is common to call the driving wheel the DRIVER, and the driven wheel the LEADER.

## PROBLEM I.

The diameter or number of teeth, and number of revolutions of the DRIVER, with the diameter or number of teeth of the LEADER being given—*required*, the revolutions of the LEADER.

RULE. Multiply the diameter or number of teeth of the DRIVER by its number of revolutions, and divide by the diameter or number of teeth of the LEADER.

## PROBLEM II.

The diameter and revolutions of the DRIVER being given—*required*, the diameter of a LEADER to make a given number of revolutions in the same time.

RULE. Multiply the diameter of the DRIVER by its number of revolutions, and divide the product by the required number of revolutions. The quotient will be the required diameter.

## PROBLEM III.

The revolutions of DRIVER and LEADER, and the diameter of LEADER being given—*required*, the diameter of the DRIVER.

RULE. Multiply the diameter of LEADER by its number of revolutions, and divide by the number of revolutions of the DRIVER.

## PROBLEM IV.

The diameter of DRIVER and LEADER, and the revolutions of LEADER being given—*required*, the number of revolutions of the DRIVER.

RULE. Multiply the diameter of LEADER by its number of revolutions, and divide by the diameter of the DRIVER.

## PROBLEM V.

The number of teeth in two or more driving wheels, and the revolutions of the first driver, and the number of teeth in an equal number of LEADERS being given—*required*, the revolutions of the last LEADER in the train.

RULE. Multiply the number of teeth in each of the driving wheels successively together, and the product by their revolutions for a dividend. Then multiply the number of teeth in each of the leading wheels in like manner for a divisor. The quotient will be the number of revolutions required.

## PLEASE READ CAREFULLY.

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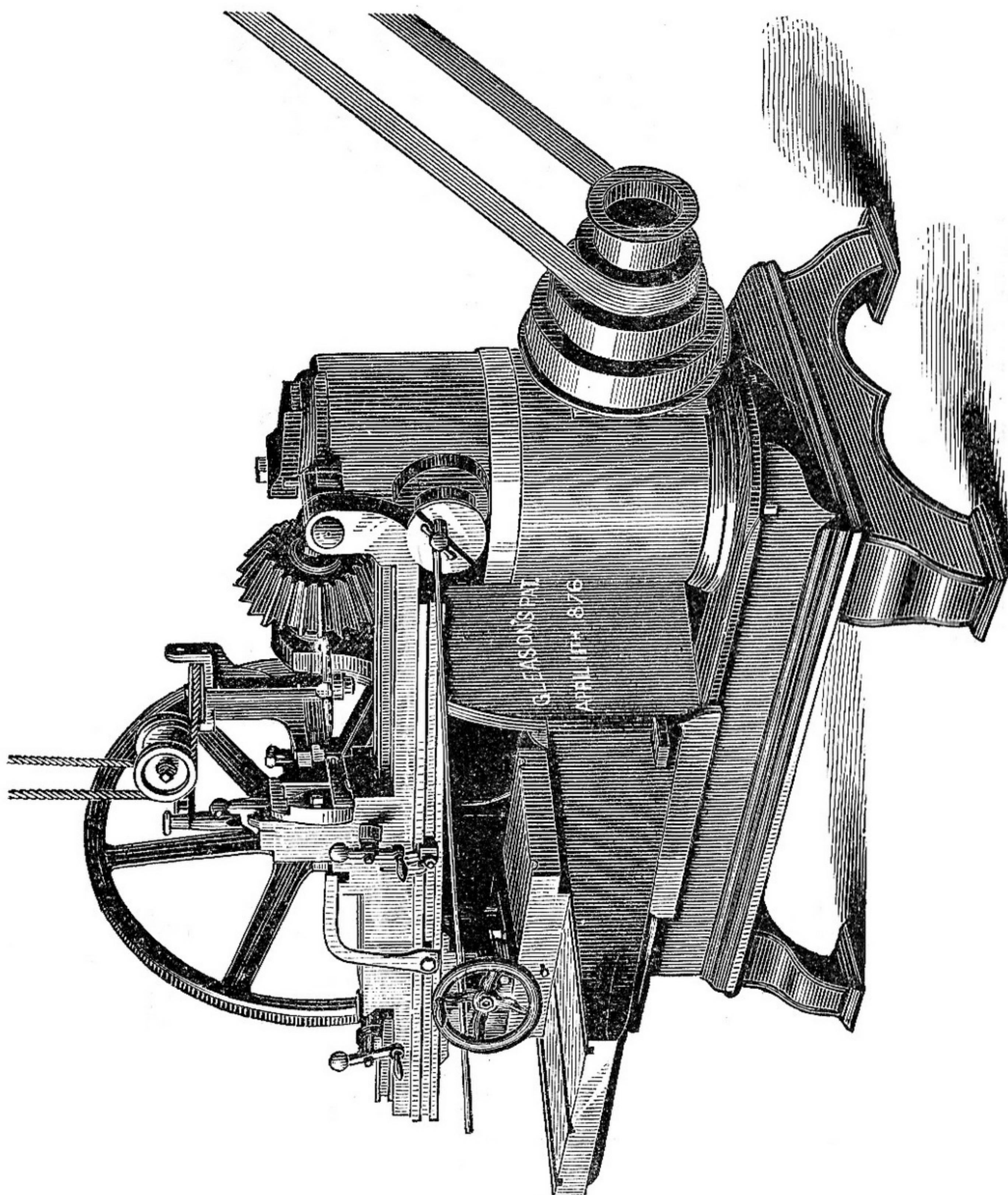
WHEN YOU ORDER WHEELS OR PULLEYS GIVE THE EXACT DIAMETER OF THE DESIRED BORE. IF YOU WANT THE CASTINGS *in the rough*, WRITE AFTER THE DESCRIPTION: "To bore—No finish."

DO NOT ORDER WHEELS TO FIT CERTAIN SIZED SHAFTING, BUT MENTION THE BORE IN INCHES AND FRACTIONS OF AN INCH, AND IF POSSIBLE SEND A WIRE THE EXACT SIZE. IF THE WHEELS ARE TO FIT *cold-rolled shafting*, HOWEVER, BE SURE TO MENTION IT.

DIAMETERS OF WHEELS ARE GIVEN IN INCHES AND HUNDREDTHS OF AN INCH MEASURED AT THE PITCH LINE.

BEVEL WHEELS WORK TOGETHER ONLY AS PAIRED BY BRACES IN THE MARGIN.

## GEAR PLANER.



We have recently added this tool to our shop. It is the only machine we know of in this country which will saw the teeth of bevel core wheels and plane the iron teeth of bevel pinions *accurately*. Gears worked by it can be relied upon as perfectly true.

## Spur Core Wheels.

No.	Pattern.	No. Teeth.	Face.			Diameter.	Depth of Eye.	Face of Rim.	Depth of Rim.	Length of Mortice.	Thickness of Mortice.	Weight.
			Teeth.	Inch.	Inch.							
1	152	6 $\frac{1}{2}$	1 $\frac{3}{4}$	85 <sup>12</sup>	10 $\frac{1}{2}$	8	2 $\frac{3}{4}$	6 $\frac{1}{2}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	
2	128	6	1 $\frac{3}{4}$	71 <sup>68</sup>	9 $\frac{3}{4}$	7 $\frac{1}{2}$	2 $\frac{3}{4}$	6	1 $\frac{5}{6}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	
3	120	6 $\frac{1}{2}$	1 $\frac{3}{4}$	67 <sup>20</sup>	10 $\frac{1}{2}$	8 $\frac{1}{8}$	2 $\frac{3}{4}$	6 $\frac{1}{2}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	
4	104	6	1 $\frac{3}{4}$	58 <sup>24</sup>	9 $\frac{3}{4}$	7 $\frac{1}{2}$	2 $\frac{3}{4}$	6 $\frac{1}{8}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	
5	88	6	1 $\frac{3}{4}$	49 <sup>28</sup>	9 $\frac{1}{2}$	7 $\frac{1}{2}$	2 $\frac{3}{4}$	6	1 $\frac{5}{6}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	
6	80	6	1 $\frac{3}{4}$	44 <sup>80</sup>	9 $\frac{1}{4}$	7 $\frac{1}{4}$	2 $\frac{3}{4}$	6	1 $\frac{5}{6}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	
7	224	7	1 $\frac{3}{4}$	125 <sup>44</sup>	10	8 $\frac{1}{2}$	2 $\frac{7}{8}$	7	1 $\frac{5}{6}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	
8	60	6	1 $\frac{3}{4}$	33 <sup>60</sup>	8 $\frac{1}{4}$	7 $\frac{1}{4}$	2 $\frac{1}{2}$	6 $\frac{1}{8}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	
9	56	6	1 $\frac{3}{4}$	31 <sup>36</sup>	8 $\frac{1}{4}$	7 $\frac{1}{4}$	2 $\frac{1}{2}$	6 $\frac{1}{8}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	
10	120	6 $\frac{1}{4}$	2	76 <sup>80</sup>	10 $\frac{1}{2}$	7 $\frac{1}{2}$	2 $\frac{1}{2}$	6 $\frac{1}{4}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	
11	112	6	1 $\frac{3}{4}$	62 <sup>72</sup>	9 $\frac{3}{4}$	7 $\frac{1}{2}$	2 $\frac{3}{4}$	6 $\frac{1}{8}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	
12	72	6	1 $\frac{3}{4}$	40 <sup>32</sup>	8 $\frac{8}{4}$	7 $\frac{1}{4}$	2 $\frac{5}{8}$	6	1	1 $\frac{5}{6}$	1 $\frac{5}{6}$	
13	40	6	1 $\frac{3}{4}$	22 <sup>40</sup>	8	7 $\frac{1}{4}$	2 $\frac{1}{2}$	6	1 $\frac{5}{6}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	
14	208	7	1 $\frac{3}{4}$	116 <sup>48</sup>	10	8 $\frac{1}{2}$	2 $\frac{7}{8}$	7	1 $\frac{5}{6}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	
15	176	6 $\frac{1}{2}$	1 $\frac{3}{4}$	98 <sup>56</sup>	10 $\frac{1}{4}$	8	2 $\frac{7}{8}$	6 $\frac{1}{2}$	1	6	1 $\frac{5}{6}$	
16	80	4	1 $\frac{1}{2}$	38 <sup>40</sup>	6 $\frac{5}{8}$	5 $\frac{3}{16}$	2	4	1	$\frac{1}{8}$	1 $\frac{5}{6}$	
17	96	6	1 $\frac{3}{4}$	53 <sup>76</sup>	9 $\frac{1}{4}$	7 $\frac{3}{8}$	2 $\frac{3}{4}$	6	1	1 $\frac{5}{6}$	1 $\frac{5}{6}$	
18	48	6	1 $\frac{3}{4}$	26 <sup>88</sup>	8 $\frac{3}{8}$	7 $\frac{1}{4}$	2 $\frac{1}{2}$	6 $\frac{1}{8}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	
19	88	6 $\frac{1}{2}$	2	56 <sup>32</sup>	9 $\frac{1}{8}$	8	3	6 $\frac{1}{2}$	1 $\frac{1}{6}$	1 $\frac{1}{6}$	1 $\frac{1}{6}$	
20	66	6	1 $\frac{3}{4}$	36 <sup>96</sup>	8 $\frac{1}{8}$	7 $\frac{3}{16}$	2 $\frac{1}{2}$	6 $\frac{1}{8}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	
21	172	6 $\frac{1}{2}$	1 $\frac{3}{4}$	96 <sup>32</sup>	10 $\frac{1}{4}$	8 $\frac{1}{8}$	3 $\frac{1}{8}$	6 $\frac{1}{2}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	1 $\frac{5}{6}$	
22	60	4	1 $\frac{1}{2}$	28 <sup>80</sup>	6 $\frac{3}{8}$	5 $\frac{3}{8}$	2	3 $\frac{1}{16}$	7	$\frac{1}{8}$	1 $\frac{5}{6}$	
23	141	6 $\frac{1}{2}$	2	90 <sup>24</sup>	10 $\frac{5}{8}$	8 $\frac{1}{3}$	3 $\frac{1}{4}$	6 $\frac{1}{2}$	1 $\frac{1}{8}$	1 $\frac{1}{8}$	1 $\frac{1}{8}$	
24	60	6	2	38 <sup>40</sup>	8 $\frac{3}{8}$	7 $\frac{1}{4}$	2 $\frac{3}{4}$	6	1 $\frac{1}{8}$	1 $\frac{1}{8}$	1 $\frac{1}{8}$	
25	80	6	2	51 <sup>20</sup>	9	7 $\frac{1}{2}$	2 $\frac{3}{4}$	6	1 $\frac{1}{8}$	1 $\frac{1}{8}$	1 $\frac{1}{8}$	
26	144	6 $\frac{1}{2}$	1 $\frac{3}{4}$	80 <sup>64</sup>	9 $\frac{3}{4}$	7 $\frac{5}{8}$	2 $\frac{3}{4}$	6 $\frac{1}{8}$	1	1 $\frac{1}{8}$	1 $\frac{1}{8}$	
27	36	6	1 $\frac{3}{4}$	20 <sup>16</sup>	8	7 $\frac{1}{4}$	2 $\frac{1}{2}$	6	1 $\frac{1}{6}$	1 $\frac{1}{6}$	1 $\frac{1}{6}$	
28	66	8 $\frac{1}{2}$	3	63 <sup>36</sup>	12 $\frac{1}{2}$	10 $\frac{3}{4}$	4 $\frac{1}{4}$	8 $\frac{1}{2}$	1 $\frac{1}{6}$	1 $\frac{1}{6}$	1 $\frac{1}{6}$	
29	44	4	1 $\frac{1}{2}$	21 <sup>12</sup>	6 $\frac{3}{8}$	5 $\frac{3}{16}$	2	4	1 $\frac{1}{8}$	1 $\frac{1}{8}$	1 $\frac{1}{8}$	
30	48	6	2	30 <sup>72</sup>	8 $\frac{3}{8}$	7 $\frac{1}{4}$	2 $\frac{3}{4}$	6	1 $\frac{1}{8}$	1 $\frac{1}{8}$	1 $\frac{1}{8}$	
31	96	6 $\frac{1}{2}$	2	61 <sup>44</sup>	9 $\frac{7}{8}$	8	3	6 $\frac{1}{2}$	1 $\frac{1}{6}$	1 $\frac{1}{6}$	1 $\frac{1}{6}$	
32	96	4	1 $\frac{1}{2}$	46 <sup>08</sup>	6 $\frac{3}{4}$	5 $\frac{3}{8}$	2	4	1 $\frac{1}{8}$	1 $\frac{1}{8}$	1 $\frac{1}{8}$	

# Spur Core Wheels.

No.	Pattern.	No. Teeth.		Face.		Diameter.	Depth of Eye	Face of Rim.	Depth of Rim	Length of Mortice.	Thickness of Mortice.	Weight.
		Teeth.	Inch.	Inch.	Inch.							
33	75	6	1 <sup>3</sup> / <sub>4</sub>	42	8 <sup>3</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>4</sub>	2 <sup>5</sup> / <sub>8</sub>	6	1	1	1	
34	42	6	1 <sup>3</sup> / <sub>4</sub>	23 <sup>5</sup> / <sub>8</sub>	8 <sup>1</sup> / <sub>2</sub>	7	2 <sup>5</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>8</sub>	1	1	1	
35	90	6	1 <sup>3</sup> / <sub>4</sub>	50 <sup>4</sup> / <sub>0</sub>	8 <sup>3</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>2</sub>	2 <sup>3</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>4</sub>	1	1	1	
36	52	6	1 <sup>3</sup> / <sub>4</sub>	29 <sup>1</sup> / <sub>2</sub>	8 <sup>3</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>4</sub>	2 <sup>1</sup> / <sub>2</sub>	6	1	1	1	
37	70	14	3	67 <sup>20</sup>	17	16 <sup>1</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>4</sub>	14	1	1 <sup>3</sup> / <sub>8</sub>	1 <sup>7</sup> / <sub>8</sub>	
38	38	3	1 <sup>1</sup> / <sub>2</sub>	18 <sup>24</sup>	4 <sup>1</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>4</sub>	2	3	1	1 <sup>2</sup> / <sub>3</sub>	1 <sup>5</sup> / <sub>8</sub>	
39	42	12	3	40 <sup>32</sup>	15	14 <sup>1</sup> / <sub>4</sub>	4 <sup>3</sup> / <sub>8</sub>	12	1	1 <sup>1</sup> / <sub>6</sub>	1 <sup>1</sup> / <sub>2</sub>	
40	48	12	3	46 <sup>08</sup>	15	14 <sup>1</sup> / <sub>4</sub>	4 <sup>3</sup> / <sub>8</sub>	12	1	1 <sup>1</sup> / <sub>6</sub>	1 <sup>1</sup> / <sub>2</sub>	
41	35	3 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>4</sub>	14	4 <sup>1</sup> / <sub>2</sub>	4	1 <sup>5</sup> / <sub>8</sub>	3	1	1 <sup>1</sup> / <sub>6</sub>	1 <sup>1</sup> / <sub>2</sub>	
42	40	3	1	12 <sup>80</sup>	4	3 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>2</sub>	2	1 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub>	
43	31	3	1	9 <sup>92</sup>	4	3 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>2</sub>	2	1 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub>	

**Stone Pinions.**

No. Pattern.	No. Teeth	Face.	Pitch.	Diameter.	Weight.
No.	Teeth.	Inch.	Inch.	Inch.	Ibs.
1	45	8	2	28 <sup>80</sup>	
2	41	7 <sup>1</sup> <sub>4</sub>	1 <sup>3</sup> <sub>4</sub>	22 <sup>96</sup>	
3	38	7 <sup>1</sup> <sub>4</sub>	1 <sup>3</sup> <sub>4</sub>	21 <sup>28</sup>	
4	30	7 <sup>1</sup> <sub>4</sub>	1 <sup>3</sup> <sub>4</sub>	16 <sup>80</sup>	
5	28	7 <sup>1</sup> <sub>2</sub>	2	17 <sup>92</sup>	
6	27	8 <sup>1</sup> <sub>4</sub>	1 <sup>7</sup> <sub>8</sub>	16 <sup>20</sup>	
7	27	7 <sup>1</sup> <sub>4</sub>	1 <sup>3</sup> <sub>4</sub>	15 <sup>12</sup>	
8	25	7 <sup>1</sup> <sub>4</sub>	2	16	
9	25	7 <sup>1</sup> <sub>4</sub>	1 <sup>3</sup> <sub>4</sub>	14	
10	22	8	2	14	
11	22	7 <sup>1</sup> <sub>4</sub>	1 <sup>3</sup> <sub>4</sub>	12 <sup>32</sup>	
12	20	7 <sup>1</sup> <sub>2</sub>	2	12 <sup>80</sup>	
13	18	7	1 <sup>3</sup> <sub>4</sub>	10 <sup>08</sup>	
14	16	8 <sup>1</sup> <sub>4</sub>	2 <sup>1</sup> <sub>8</sub>	10 <sup>88</sup>	
15	16	7 <sup>1</sup> <sub>4</sub>	2	10 <sup>24</sup>	
16	15	6 <sup>1</sup> <sub>2</sub>	2 <sup>1</sup> <sub>2</sub>	12	
17	34	7 <sup>1</sup> <sub>4</sub>	1 <sup>3</sup> <sub>4</sub>	19 <sup>04</sup>	
18	48	7 <sup>1</sup> <sub>4</sub>	1 <sup>3</sup> <sub>4</sub>	26 <sup>88</sup>	
19	35	8 <sup>1</sup> <sub>4</sub>	1 <sup>3</sup> <sub>4</sub>	19 <sup>60</sup>	
20	22	8	2 <sup>1</sup> <sub>2</sub>	17 <sup>60</sup>	
21	33	7 <sup>1</sup> <sub>2</sub>	2	21 <sup>12</sup>	
22	31	7 <sup>1</sup> <sub>4</sub>	1 <sup>3</sup> <sub>4</sub>	17 <sup>36</sup>	
23	33	7 <sup>1</sup> <sub>4</sub>	1 <sup>3</sup> <sub>4</sub>	18 <sup>48</sup>	
24	127	7 <sup>1</sup> <sub>2</sub>	1 <sup>3</sup> <sub>4</sub>	71 <sup>12</sup>	
25	32	7 <sup>1</sup> <sub>2</sub>	1 <sup>3</sup> <sub>4</sub>	17 <sup>92</sup>	
26	59	4 <sup>1</sup> <sub>2</sub>	1 <sup>1</sup> <sub>2</sub>	28 <sup>32</sup>	
27	25	4 <sup>1</sup> <sub>2</sub>	1 <sup>1</sup> <sub>2</sub>	12	
28	18	7 <sup>1</sup> <sub>4</sub>	2	11 <sup>52</sup>	
29	23	8	1 <sup>7</sup> <sub>8</sub>	13 <sup>80</sup>	
30	54	7 <sup>1</sup> <sub>4</sub>	1 <sup>3</sup> <sub>4</sub>	30 <sup>24</sup>	
31	36	7 <sup>1</sup> <sub>4</sub>	1 <sup>3</sup> <sub>4</sub>	20 <sup>16</sup>	
32	44	7 <sup>1</sup> <sub>4</sub>	1 <sup>3</sup> <sub>4</sub>	24 <sup>64</sup>	

## Stone Pinions.

No. Pattern.	No. Teeth.	Face.	Pitch.	Diameter.	Weight.
Inch.	Teeth.	Inch.	Inch.	Inch.	Sleeve.
33	31	4 $\frac{1}{2}$	1 $\frac{1}{2}$	14 <sup>88</sup>	
34	39	4 $\frac{1}{2}$	1 $\frac{1}{2}$	18 <sup>72</sup>	
35	19	7 $\frac{1}{4}$	2 $\frac{1}{2}$	15 <sup>20</sup>	
36	67	7 $\frac{1}{4}$	1 $\frac{3}{4}$	37 <sup>52</sup>	
37	29	7 $\frac{1}{4}$	1 $\frac{3}{4}$	16 <sup>24</sup>	
38	28	7 $\frac{1}{4}$	1 $\frac{3}{4}$	15 <sup>68</sup>	
39	64	7 $\frac{1}{4}$	1 $\frac{3}{4}$	35 <sup>84</sup>	
40	86	7 $\frac{1}{4}$	1 $\frac{3}{4}$	48 <sup>16</sup>	
41	59	7 $\frac{1}{4}$	2	37 <sup>76</sup>	
42	44	6 $\frac{3}{4}$	1 $\frac{5}{8}$	22 <sup>88</sup>	
43	32	7 $\frac{1}{4}$	2	20 <sup>48</sup>	
*A	27	7 $\frac{1}{4}$	2	17 <sup>28</sup>	
44	52	7 $\frac{1}{4}$	1 $\frac{3}{4}$	29 <sup>12</sup>	
45	38	7 $\frac{1}{4}$	2	24 <sup>32</sup>	
46	30	7 $\frac{1}{4}$	2	19 <sup>20</sup>	
47	31	9	3	29 <sup>76</sup>	
48	75	7 $\frac{1}{4}$	1 $\frac{3}{4}$	42	
49	19	6 $\frac{1}{2}$	2 $\frac{3}{4}$	16 <sup>72</sup>	
†50	21	7 $\frac{1}{4}$	2 $\frac{1}{4}$	15 <sup>12</sup>	
51	52	7 $\frac{1}{4}$	1 $\frac{7}{8}$	31 <sup>20</sup>	
52	23	8	2	14 <sup>72</sup>	
53	20	4 $\frac{1}{2}$	1 $\frac{1}{2}$	9 <sup>60</sup>	
54	33	4 $\frac{1}{2}$	1 $\frac{1}{2}$	15 <sup>84</sup>	
55	40	7 $\frac{1}{4}$	1 $\frac{3}{4}$	22 <sup>40</sup>	
56	50	7 $\frac{1}{2}$	1 $\frac{3}{4}$	28	
57	31	8	2 $\frac{1}{2}$	24 <sup>80</sup>	
58	46	7 $\frac{1}{4}$	1 $\frac{3}{4}$	25 <sup>76</sup>	
59	81	7 $\frac{1}{4}$	1 $\frac{3}{4}$	45 <sup>36</sup>	
60	40	14 $\frac{1}{2}$	3	38 <sup>40</sup>	
61	61	7 $\frac{1}{4}$	2	39 <sup>04</sup>	
62	94	7 $\frac{1}{4}$	1 $\frac{3}{4}$	52 <sup>64</sup>	
63	22	4 $\frac{1}{4}$	1 $\frac{1}{2}$	10 <sup>56</sup>	

\* Can make 2 inch pitch when dressed.

† Teeth short to match old wheel.

## Stone Pinions.

No. Pattern. Inch.	No. Teeth. Teeth.	Face. Inch.	Pitch. Inch.	Diameter. Inch.	Weight. Sleeve.
64	68	4 $\frac{1}{2}$	1 $\frac{1}{2}$	32 $\frac{6}{16}$	
65	19	3 $\frac{1}{4}$	1 $\frac{1}{2}$	9 $\frac{1}{2}$	
66	42	12	3	40 $\frac{3}{8}$	
67	24	6 $\frac{1}{4}$	1 $\frac{3}{4}$	13 $\frac{4}{16}$	
68	16	3	1	5 $\frac{1}{2}$	
69	35	3 $\frac{1}{2}$	1 $\frac{1}{4}$	14	
70	25	3	1	8	

## Bevel Core Wheels.

No. Pattern.	No. Teeth	Face.	Pitch.	Diameter.	Backing.	Face of Rim.	D <sup>o</sup> pth of Rim	Length of Mortice.	Thickness of Mortice.	Depth of Eye.
No.	Teeth.	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.
1	90	8	2 <sup>1</sup> / <sub>4</sub>	64 <sup>80</sup>	6 <sup>5</sup> / <sub>8</sub>	8 <sup>7</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>4</sub>	7 <sup>5</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>4</sub>	9 <sup>3</sup> / <sub>4</sub>
2	40	8	2 <sup>1</sup> / <sub>4</sub>	28 <sup>80</sup>	1 <sup>3</sup> / <sub>4</sub>					9 <sup>3</sup> / <sub>4</sub>
3	84	9 <sup>1</sup> / <sub>4</sub>	2 <sup>2</sup> / <sub>3</sub>	63 <sup>84</sup>	6 <sup>3</sup> / <sub>4</sub>	10 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>4</sub>	8 <sup>3</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>8</sub>
4	38	9 <sup>1</sup> / <sub>4</sub>	2 <sup>2</sup> / <sub>3</sub>	28 <sup>88</sup>	2					10 <sup>1</sup> / <sub>8</sub>
5	75	6	2	48	4	7 <sup>1</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>2</sub>	6	1 <sup>1</sup> / <sub>4</sub>	6
6	26	6	2	16 <sup>64</sup>	1 <sup>3</sup> / <sub>4</sub>					7 <sup>1</sup> / <sub>4</sub>
7	61	4	1 <sup>1</sup> / <sub>2</sub>	29 <sup>28</sup>	3 <sup>5</sup> / <sub>8</sub>					5 <sup>7</sup> / <sub>8</sub>
8	30	4 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>2</sub>	14 <sup>40</sup>	1 <sup>5</sup> / <sub>8</sub>	5	1 <sup>3</sup> / <sub>4</sub>	4	1 <sup>15</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>4</sub>
9	42	5	5	20 <sup>16</sup>	2 <sup>3</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>4</sub>	2 <sup>3</sup> / <sub>8</sub>	4 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>4</sub>	5 <sup>1</sup> / <sub>4</sub>
10	33	5	5	15 <sup>84</sup>	2 <sup>1</sup> / <sub>8</sub>	5 <sup>7</sup> / <sub>8</sub>	2	4 <sup>3</sup> / <sub>4</sub>	2 <sup>1</sup> / <sub>4</sub>	5 <sup>1</sup> / <sub>4</sub>
11	60	5	1 <sup>1</sup> / <sub>2</sub>	26 <sup>40</sup>	2 <sup>8</sup> / <sub>9</sub>					5 <sup>1</sup> / <sub>4</sub>
12	31	5	1 <sup>1</sup> / <sub>2</sub>	13 <sup>64</sup>	1 <sup>1</sup> / <sub>2</sub>					5 <sup>1</sup> / <sub>4</sub>
13	73	3	1 <sup>1</sup> / <sub>2</sub>	35 <sup>04</sup>	3 <sup>8</sup> / <sub>9</sub>	4 <sup>1</sup> / <sub>8</sub>	1 <sup>5</sup> / <sub>8</sub>	3	1 <sup>5</sup> / <sub>16</sub>	5
14	21	3	1 <sup>1</sup> / <sub>2</sub>	10 <sup>08</sup>	1	2 <sup>1</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>8</sub>	1 <sup>15</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>8</sub>
15	40	3 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>4</sub>	16	1 <sup>5</sup> / <sub>8</sub>		1 <sup>1</sup> / <sub>2</sub>	3 <sup>3</sup> / <sub>8</sub>	11 <sup>15</sup> / <sub>16</sub>	3 <sup>8</sup> / <sub>11</sub>
16	25	3 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>4</sub>	10	1 <sup>5</sup> / <sub>8</sub>					4 <sup>1</sup> / <sub>2</sub>
17	56	6 <sup>3</sup> / <sub>4</sub>	2	35 <sup>84</sup>	1 <sup>1</sup> / <sub>4</sub>	8 <sup>1</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>2</sub>	6 <sup>3</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>8</sub>	7 <sup>7</sup> / <sub>8</sub>
18	32	6 <sup>3</sup> / <sub>4</sub>	2	20 <sup>48</sup>	2 <sup>1</sup> / <sub>2</sub>					8 <sup>8</sup> / <sub>23</sub>
19	64	6	1 <sup>1</sup> / <sub>4</sub>	35 <sup>84</sup>	3 <sup>1</sup> / <sub>2</sub>	7 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>2</sub>	6	1	6 <sup>1</sup> / <sub>2</sub>
20	33	6	1 <sup>1</sup> / <sub>4</sub>	18 <sup>48</sup>	1 <sup>3</sup> / <sub>4</sub>					7 <sup>1</sup> / <sub>8</sub>
21	44	6	1 <sup>1</sup> / <sub>4</sub>	24 <sup>64</sup>	2 <sup>3</sup> / <sub>4</sub>	6 <sup>3</sup> / <sub>4</sub>	2 <sup>1</sup> / <sub>2</sub>	5 <sup>3</sup> / <sub>4</sub>	15 <sup>15</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>4</sub>
22	29	6	1 <sup>1</sup> / <sub>4</sub>	16 <sup>24</sup>	2 <sup>1</sup> / <sub>8</sub>					7 <sup>1</sup> / <sub>2</sub>
23	44	6	2	28 <sup>16</sup>	3	7 <sup>1</sup> / <sub>4</sub>	2 <sup>1</sup> / <sub>4</sub>	6	1 <sup>1</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>4</sub>
24	29	6	2	18 <sup>56</sup>	2 <sup>1</sup> / <sub>2</sub>					7 <sup>1</sup> / <sub>2</sub>
25	54	6	2	34 <sup>64</sup>	3 <sup>3</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>4</sub>	2 <sup>1</sup> / <sub>4</sub>	6	1 <sup>1</sup> / <sub>4</sub>	6 <sup>7</sup> / <sub>8</sub>
26	36	6	2	23 <sup>04</sup>	2 <sup>5</sup> / <sub>8</sub>					7 <sup>1</sup> / <sub>8</sub>
27	74	7	2	47 <sup>36</sup>	3 <sup>2</sup> / <sub>4</sub>	8 <sup>1</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>2</sub>	7	1 <sup>1</sup> / <sub>4</sub>	6 <sup>5</sup> / <sub>8</sub>
28	33	7	2	21 <sup>12</sup>	1 <sup>7</sup> / <sub>8</sub>					8
29	53	5 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>8</sub>	27 <sup>56</sup>	2 <sup>3</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>
30	27	5 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>8</sub>	14 <sup>04</sup>	1 <sup>8</sup> / <sub>9</sub>					6 <sup>2</sup> / <sub>3</sub>
31	78	7	2	49 <sup>92</sup>	4	8	2 <sup>5</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>2</sub>
32	40	7 <sup>1</sup> / <sub>4</sub>	2	25 <sup>60</sup>	1 <sup>5</sup> / <sub>4</sub>					8 <sup>1</sup> / <sub>8</sub>

**Bevel Core Wheels.**

Pattern.	No. Teeth.	Face.	Pitch.	Diameter.	Backing.	Face of Rim.	Depth of Rim.	Length of Mortice.	Thickness of Mortice.	Depth of Eye.
No.	Teeth.	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.
17	70	8	2	44 <sup>80</sup>	3 <sup>1</sup> <sub>2</sub>	9	2 <sup>3</sup> <sub>4</sub>	7 <sup>3</sup> <sub>4</sub>	1 <sup>1</sup> <sub>4</sub>	8 <sup>1</sup> <sub>2</sub>
	52	8 <sup>1</sup> <sub>8</sub>	2	33 <sup>28</sup>	2 <sup>1</sup> <sub>3</sub> <sup>6</sup>					9 <sup>1</sup> <sub>2</sub>
18	112	7	2	71 <sup>68</sup>	6 <sup>1</sup> <sub>4</sub>	8 <sup>1</sup> <sub>4</sub>	2 <sup>3</sup> <sub>4</sub>	6 <sup>3</sup> <sub>4</sub>	1 <sup>1</sup> <sub>4</sub>	8 <sup>3</sup> <sub>8</sub>
	37	7 <sup>1</sup> <sub>4</sub>	2	23 <sup>68</sup>	1 <sup>1</sup> <sub>4</sub>					8 <sup>1</sup> <sub>8</sub>
19	92	7	2	58 <sup>88</sup>	6	7 <sup>7</sup> <sub>8</sub>	2 <sup>5</sup> <sub>8</sub>	6 <sup>3</sup> <sub>4</sub>	1 <sup>1</sup> <sub>4</sub>	8 <sup>8</sup> <sub>5</sub>
	36	7 <sup>1</sup> <sub>4</sub>	2	23 <sup>04</sup>	1 <sup>3</sup> <sub>8</sub>					8 <sup>1</sup> <sub>8</sub>
A	56	6	1 <sup>5</sup> <sub>8</sub>	29 <sup>12</sup>	4	7	2 <sup>8</sup>	5 <sup>1</sup> <sub>6</sub>	1 <sup>3</sup> <sub>6</sub>	Angle.
	46	6	1 <sup>5</sup> <sub>8</sub>	23 <sup>92</sup>	2 <sup>7</sup> <sub>8</sub>					"
20	30	2 <sup>1</sup> <sub>2</sub>	1 <sup>1</sup> <sub>4</sub>	12	2	3 <sup>3</sup> <sub>16</sub>	1 <sup>1</sup> <sub>4</sub>	2 <sup>1</sup> <sub>2</sub>	1 <sup>1</sup> <sub>6</sub>	3 <sup>1</sup> <sub>8</sub>
	26	2 <sup>1</sup> <sub>2</sub>	1 <sup>1</sup> <sub>4</sub>	10 <sup>40</sup>	1 <sup>3</sup> <sub>8</sub>					3 <sup>1</sup> <sub>8</sub>
21	152	7	2	97 <sup>28</sup>	7 <sup>3</sup> <sub>8</sub>	8 <sup>1</sup> <sub>4</sub>	2 <sup>7</sup> <sub>8</sub>	6 <sup>3</sup> <sub>4</sub>	1 <sup>1</sup> <sub>4</sub>	9
	36	7	2	23 <sup>04</sup>	1 <sup>1</sup> <sub>2</sub>					8 <sup>1</sup> <sub>2</sub>
22	46	7	2	29 <sup>44</sup>	2 <sup>3</sup> <sub>4</sub>	8 <sup>1</sup> <sub>4</sub>	2 <sup>5</sup> <sub>8</sub>	7	1 <sup>3</sup> <sub>6</sub>	6
	38	7	2	24 <sup>32</sup>	2 <sup>7</sup> <sub>8</sub>					8 <sup>1</sup> <sub>2</sub>
23	58	6	1 <sup>3</sup> <sub>4</sub>	32 <sup>48</sup>	4 <sup>1</sup> <sub>4</sub>	7 <sup>1</sup> <sub>4</sub>	2 <sup>1</sup> <sub>2</sub>	6	1	7 <sup>1</sup> <sub>4</sub>
	28	6	1 <sup>3</sup> <sub>4</sub>	15 <sup>68</sup>	2					7 <sup>1</sup> <sub>2</sub>
24	46	4	1 <sup>3</sup> <sub>8</sub>	20 <sup>24</sup>	2 <sup>3</sup> <sub>4</sub>	5 <sup>1</sup> <sub>8</sub>	1 <sup>5</sup> <sub>8</sub>	4	1 <sup>3</sup> <sub>6</sub>	4
	25	4	1 <sup>3</sup> <sub>8</sub>	11	1 <sup>1</sup> <sub>2</sub>					5
25	54	5	1 <sup>1</sup> <sub>2</sub>	25 <sup>92</sup>	3 <sup>1</sup> <sub>8</sub>	5 <sup>1</sup> <sub>5</sub> <sub>6</sub>	1 <sup>3</sup> <sub>4</sub>	4 <sup>7</sup> <sub>8</sub>	1 <sup>3</sup> <sub>6</sub>	5 <sup>1</sup> <sub>4</sub>
	24	5	1 <sup>1</sup> <sub>2</sub>	11 <sup>52</sup>	1 <sup>1</sup> <sub>4</sub>					5 <sup>3</sup> <sub>4</sub>
26	56	8	2 <sup>1</sup> <sub>4</sub>	40 <sup>32</sup>	3	9 <sup>1</sup> <sub>4</sub>	3 <sup>1</sup> <sub>8</sub>	7 <sup>7</sup> <sub>8</sub>	1 <sup>3</sup> <sub>8</sub>	9
	55	8	2 <sup>1</sup> <sub>4</sub>	39 <sup>60</sup>	3 <sup>3</sup> <sub>4</sub>					9
27	80	12	3	76 <sup>80</sup>	8 <sup>1</sup> <sub>4</sub>	13 <sup>5</sup> <sub>8</sub>	4	11 <sup>3</sup> <sub>4</sub>	1 <sup>7</sup> <sub>8</sub>	14 <sup>1</sup> <sub>2</sub>
	49	12	3	47 <sup>04</sup>	3 <sup>1</sup> <sub>8</sub>					13
28	63	6	1 <sup>3</sup> <sub>4</sub>	35 <sup>28</sup>	3 <sup>5</sup> <sub>6</sub>	7 <sup>3</sup> <sub>8</sub>	2 <sup>1</sup> <sub>2</sub>	6	1 <sup>3</sup> <sub>6</sub>	8
	60	6	1 <sup>3</sup> <sub>4</sub>	33 <sup>60</sup>	3 <sup>3</sup> <sub>4</sub>					7 <sup>7</sup> <sub>8</sub>
29	56	6	1 <sup>5</sup> <sub>8</sub>	29 <sup>12</sup>	4	7	2 <sup>3</sup> <sub>8</sub>	5 <sup>1</sup> <sub>6</sub>	1 <sup>3</sup> <sub>6</sub>	6 <sup>7</sup> <sub>8</sub>
	46	6	1 <sup>5</sup> <sub>8</sub>	23 <sup>92</sup>	2 <sup>1</sup> <sub>2</sub>					7
30	92	7	2	58 <sup>88</sup>	6 <sup>7</sup> <sub>8</sub>	8 <sup>1</sup> <sub>8</sub>	2 <sup>5</sup> <sub>8</sub>	6 <sup>3</sup> <sub>4</sub>	1 <sup>1</sup> <sub>4</sub>	8 <sup>5</sup> <sub>8</sub>
	26	7	2	16 <sup>64</sup>	1 <sup>1</sup> <sub>4</sub>					8 <sup>1</sup> <sub>2</sub>
31	72	4	1 <sup>1</sup> <sub>2</sub>	34 <sup>56</sup>	4 <sup>1</sup> <sub>6</sub>	5	1 <sup>3</sup> <sub>4</sub>	4	1 <sup>3</sup> <sub>6</sub>	5 <sup>3</sup> <sub>8</sub>
	22	4	1 <sup>1</sup> <sub>2</sub>	10 <sup>56</sup>	1 <sup>5</sup> <sub>6</sub>					4 <sup>1</sup> <sub>6</sub>

## Bevel Core Wheels.

Pattern.		No.	Teeth.	Inch.	Inch.	Pitch.	Diameter.	Backing.	Face of Rim.	Depth of Rim.	Length of Mortice.	Thickness of Mortice.	Depth of Eye.	
32	66	7	2	42	3 $\frac{1}{2}$	8 $\frac{3}{4}$	2 $\frac{5}{8}$	7	1 $\frac{1}{4}$	8 $\frac{5}{8}$	8 $\frac{1}{4}$	10 $\frac{1}{2}$	10 $\frac{1}{8}$	
	60	7	2	38 <sup>40</sup>	3 $\frac{3}{4}$	10 $\frac{1}{6}$	3 $\frac{1}{2}$	9	1 $\frac{9}{16}$	9				
33	63	9	2 $\frac{1}{2}$	50 <sup>40</sup>	5 $\frac{3}{4}$	8 $\frac{3}{8}$	2 $\frac{1}{16}$	7	1 $\frac{1}{4}$	7 $\frac{7}{8}$	8 $\frac{1}{8}$	9 $\frac{1}{2}$	9 $\frac{1}{4}$	
	36	9	2 $\frac{1}{2}$	28 <sup>80</sup>	2 $\frac{1}{2}$	5 $\frac{1}{4}$	8 $\frac{3}{8}$	2 $\frac{1}{16}$	7	1 $\frac{1}{4}$	8 $\frac{7}{8}$			
34	67	7	2	42 <sup>88</sup>	5 $\frac{1}{4}$	9 $\frac{9}{16}$	3	8	1 $\frac{7}{16}$	8 $\frac{1}{8}$	4 $\frac{3}{4}$	4 $\frac{3}{4}$	4 $\frac{3}{4}$	
	26	7 $\frac{1}{4}$	2	16 <sup>64</sup>	1 $\frac{1}{2}$	5 $\frac{1}{4}$	8 $\frac{3}{8}$	2 $\frac{1}{16}$	7	1 $\frac{1}{4}$	7 $\frac{7}{8}$			
35	74	8	2 $\frac{1}{4}$	53 <sup>28</sup>	2 $\frac{1}{16}$	9 $\frac{9}{16}$	3	8	1 $\frac{7}{16}$	8 $\frac{7}{8}$	9 $\frac{1}{2}$	9 $\frac{1}{4}$	9 $\frac{1}{4}$	
	45	8 $\frac{1}{4}$	2 $\frac{1}{4}$	32 <sup>40</sup>	1 $\frac{3}{16}$	5	1 $\frac{1}{16}$	4	3 $\frac{1}{4}$	3 $\frac{1}{4}$	4 $\frac{3}{8}$			
36	42	4	1 $\frac{3}{8}$	18 <sup>48</sup>	1 $\frac{3}{4}$	5	1 $\frac{1}{16}$	4	3 $\frac{1}{4}$	4 $\frac{3}{4}$	4 $\frac{3}{4}$	4 $\frac{3}{4}$	4 $\frac{3}{4}$	4 $\frac{3}{4}$
	40	4	1 $\frac{3}{8}$	17 <sup>60</sup>	2 $\frac{1}{16}$	5	1 $\frac{1}{16}$	4	3 $\frac{1}{4}$	4 $\frac{3}{4}$	4 $\frac{3}{4}$			
37	66	8	2 $\frac{1}{2}$	52 <sup>80</sup>	5	9 $\frac{3}{4}$	3 $\frac{1}{4}$	8	1 $\frac{9}{16}$	9 $\frac{1}{2}$	9 $\frac{1}{2}$	9 $\frac{1}{8}$	9 $\frac{1}{8}$	9 $\frac{1}{8}$
	39	8	2 $\frac{1}{2}$	31 <sup>20</sup>	2 $\frac{5}{8}$	4 $\frac{3}{8}$	1 $\frac{5}{8}$	3 $\frac{1}{2}$	1 $\frac{1}{16}$	1 $\frac{1}{16}$	1 $\frac{1}{16}$			
38	42	3 $\frac{1}{2}$	1 $\frac{1}{4}$	16 <sup>80</sup>	2 $\frac{3}{8}$	4 $\frac{3}{8}$	1 $\frac{5}{8}$	3 $\frac{1}{2}$	1 $\frac{1}{16}$	4 $\frac{7}{8}$	4 $\frac{7}{8}$	4 $\frac{1}{4}$	4 $\frac{1}{4}$	4 $\frac{1}{4}$
	38	3 $\frac{1}{2}$	1 $\frac{1}{4}$	15 <sup>20</sup>	1 $\frac{7}{8}$	4 $\frac{3}{8}$	1 $\frac{5}{8}$	3 $\frac{1}{2}$	1 $\frac{1}{16}$	4 $\frac{1}{4}$	4 $\frac{1}{4}$			
39	125	7	2	80	6 $\frac{1}{4}$	8 $\frac{3}{8}$	2 $\frac{5}{8}$	7	1 $\frac{1}{4}$	7 $\frac{7}{8}$	7 $\frac{7}{8}$	8 $\frac{1}{4}$	8 $\frac{1}{4}$	8 $\frac{1}{4}$
	31	7 $\frac{1}{4}$	2	19 <sup>84</sup>	1 $\frac{1}{8}$	7 $\frac{5}{8}$	2 $\frac{5}{8}$	7	1 $\frac{1}{4}$	7 $\frac{7}{8}$	7 $\frac{7}{8}$			
40	54	7	2	34 <sup>56</sup>	2 $\frac{1}{16}$	7 $\frac{5}{8}$	2 $\frac{5}{8}$	7	1 $\frac{1}{4}$	7 $\frac{7}{8}$	7 $\frac{7}{8}$	8 $\frac{1}{4}$	8 $\frac{1}{4}$	8 $\frac{1}{4}$
	45	7 $\frac{1}{4}$	2	28 <sup>80</sup>	3 $\frac{1}{8}$	6 $\frac{5}{8}$	2 $\frac{5}{8}$	5 $\frac{1}{2}$	7	1 $\frac{1}{4}$	7 $\frac{7}{8}$			
41	35	5 $\frac{1}{2}$	1 $\frac{5}{8}$	18 <sup>20</sup>	3 $\frac{1}{4}$	6 $\frac{5}{8}$	2 $\frac{5}{8}$	5 $\frac{1}{2}$	7	7	7	6	6 $\frac{1}{2}$	6 $\frac{1}{2}$
	31	5 $\frac{1}{2}$	1 $\frac{5}{8}$	16 <sup>12</sup>	2 $\frac{3}{8}$	6 $\frac{5}{8}$	2 $\frac{5}{8}$	5 $\frac{1}{2}$	7	7	7			
42	64	7	2	40 <sup>96</sup>	3 $\frac{7}{8}$	8 $\frac{3}{8}$	2 $\frac{5}{8}$	7	1 $\frac{1}{4}$	7 $\frac{7}{8}$	7 $\frac{7}{8}$	8 $\frac{1}{4}$	8 $\frac{1}{4}$	8 $\frac{1}{4}$
	40	7 $\frac{1}{4}$	2	25 <sup>60</sup>	2 $\frac{7}{16}$	8 $\frac{3}{8}$	2 $\frac{5}{8}$	7	1 $\frac{1}{4}$	7 $\frac{7}{8}$	7 $\frac{7}{8}$			
43	68	7	2	43 <sup>52</sup>	5 $\frac{1}{8}$	8 $\frac{3}{8}$	2 $\frac{5}{8}$	7	1 $\frac{1}{4}$	7 $\frac{7}{8}$	7 $\frac{7}{8}$	7 $\frac{1}{4}$	7 $\frac{1}{4}$	7 $\frac{1}{4}$
	22	7	2	14 <sup>08</sup>	1 $\frac{1}{8}$	8 $\frac{3}{8}$	2 $\frac{5}{8}$	7	1 $\frac{1}{4}$	7 $\frac{7}{8}$	7 $\frac{7}{8}$			
44	76	8	2	48 <sup>64</sup>	4 $\frac{1}{16}$	9 $\frac{3}{8}$	2 $\frac{5}{8}$	8	1 $\frac{1}{4}$	7 $\frac{7}{8}$	7 $\frac{7}{8}$	8 $\frac{1}{4}$	8 $\frac{1}{4}$	8 $\frac{1}{4}$
	38	8 $\frac{1}{4}$	2	24 <sup>32</sup>	1 $\frac{1}{16}$	9 $\frac{3}{8}$	2 $\frac{5}{8}$	8	1 $\frac{1}{4}$	7 $\frac{7}{8}$	7 $\frac{7}{8}$			
45	48	5 $\frac{1}{2}$	1 $\frac{5}{8}$	24 <sup>96</sup>	2 $\frac{1}{16}$	6 $\frac{5}{8}$	2 $\frac{1}{8}$	5 $\frac{1}{2}$	7	7	7	5 $\frac{1}{8}$	5 $\frac{1}{8}$	5 $\frac{1}{8}$
	36	5 $\frac{1}{2}$	1 $\frac{5}{8}$	18 <sup>72</sup>	2 $\frac{1}{8}$	6 $\frac{5}{8}$	2 $\frac{1}{8}$	5 $\frac{1}{2}$	7	7	7			
*B	56	8	2 $\frac{1}{4}$	40 <sup>32</sup>	6 $\frac{1}{4}$	9 $\frac{5}{8}$	3 $\frac{1}{8}$	8	1 $\frac{3}{8}$	9 $\frac{1}{8}$	9 $\frac{1}{8}$	9 $\frac{1}{8}$	9 $\frac{1}{8}$	9 $\frac{1}{8}$
	55	8 $\frac{1}{4}$	2 $\frac{1}{4}$	39 <sup>60</sup>	6 $\frac{3}{4}$	9 $\frac{3}{4}$	3 $\frac{1}{4}$	8	1 $\frac{9}{16}$	8	8			
46	68	8	2 $\frac{1}{2}$	54 <sup>40</sup>	3	9 $\frac{3}{4}$	3 $\frac{1}{4}$	8	1 $\frac{9}{16}$	8	8	9 $\frac{1}{4}$	9 $\frac{1}{4}$	9 $\frac{1}{4}$
	47	8	2 $\frac{1}{2}$	37 <sup>60</sup>	3 $\frac{1}{16}$									

\* Shaft obtuse angle, 137 degrees.

## Bevel Core Wheels.

Pattern.	No. Teeth.	Face.	Pitch.	Diameter.	Backing.	Face of Rim.	Depth of Rim	Length of Mortice.	Thickness of Mortice.	Depth of Eye
No.	Teeth.	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.
47	67	5	$1\frac{1}{2}$	$32^{1\frac{6}{7}}$	$3\frac{7}{16}$	$6\frac{1}{8}$	2	5	$\frac{13}{16}$	$5\frac{1}{2}$
	28	5	$1\frac{1}{2}$	$13^{4\frac{4}{7}}$	$1\frac{3}{16}$				$\frac{13}{16}$	6
48	50	4	$1\frac{1}{2}$	24	$1\frac{7}{8}$	$5\frac{1}{8}$	$1\frac{7}{8}$	4	$\frac{13}{16}$	$5\frac{1}{8}$
	49	4	$1\frac{1}{2}$	$23^{5\frac{2}{7}}$	$2\frac{1}{2}$				$\frac{13}{16}$	$5\frac{1}{8}$
49	42	11	3	$40^{3\frac{2}{7}}$	$4\frac{1}{2}$	$12\frac{1}{2}$	4	11	$1\frac{3}{16}$	$12\frac{1}{2}$
	60	11	3	$57^{6\frac{0}{7}}$	$6\frac{3}{4}$				$1\frac{5}{8}$	12
50	68	10	$2\frac{3}{4}$	$59^{8\frac{4}{7}}$	6	$11\frac{3}{4}$	$3\frac{3}{4}$	10	$1\frac{5}{8}$	$12\frac{1}{2}$
	54	10	$2\frac{3}{4}$	$47^{5\frac{2}{7}}$					$1\frac{5}{8}$	11
51	74	$4\frac{1}{2}$	$1\frac{1}{2}$	$35^{5\frac{2}{7}}$	$3\frac{1}{2}$	$5\frac{5}{8}$	$1\frac{3}{4}$	$4\frac{1}{2}$	$\frac{13}{16}$	$5\frac{1}{8}$
	25	$4\frac{1}{2}$	$1\frac{1}{2}$	12	1				$5\frac{5}{8}$	$5\frac{1}{8}$
52	98	7	2	$62^{7\frac{2}{7}}$	$6\frac{1}{2}$	$8\frac{3}{8}$	$2\frac{5}{8}$	7	$1\frac{1}{4}$	$8\frac{3}{8}$
	35	7	2	$22^{4\frac{0}{7}}$	$1\frac{1}{4}$				$7\frac{3}{8}$	$7\frac{3}{8}$
53	68	6	$1\frac{3}{4}$	$38^{0\frac{8}{7}}$	$4\frac{3}{4}$	$7\frac{1}{4}$	$2\frac{1}{2}$	6	1	$6\frac{1}{4}$
	28	6	$1\frac{3}{4}$	$15^{6\frac{8}{7}}$	$1\frac{1}{4}$				$6\frac{1}{4}$	$6\frac{1}{4}$
54	112	7	2	$71^{6\frac{8}{7}}$	6	$8\frac{1}{2}$	$2\frac{3}{4}$	7	$1\frac{1}{4}$	$8\frac{3}{8}$
	44	$7\frac{1}{4}$	2	$28^{1\frac{6}{7}}$	$1\frac{1}{2}$				$8\frac{3}{8}$	$8\frac{3}{8}$
55	60	9	$2\frac{1}{2}$	48	$5\frac{3}{4}$	$10\frac{1}{16}$	$3\frac{1}{2}$	9	$1\frac{9}{16}$	$12\frac{1}{2}$
	58	$9\frac{1}{4}$	$2\frac{1}{2}$	$46^{4\frac{0}{7}}$	$4\frac{1}{4}$				$1\frac{3}{16}$	10
56	61	$5\frac{1}{2}$	$1\frac{5}{8}$	$31^{7\frac{2}{7}}$	$3\frac{7}{8}$	$6\frac{5}{8}$	$2\frac{1}{4}$	$5\frac{1}{2}$	$\frac{13}{16}$	$6\frac{1}{2}$
	30	$5\frac{1}{2}$	$1\frac{5}{8}$	$15^{6\frac{0}{7}}$	$1\frac{2}{3}$				$6\frac{1}{4}$	$6\frac{1}{4}$
57	125	5	$1\frac{3}{4}$	70	6	$6\frac{1}{2}$	$2\frac{1}{4}$	5	1	$6\frac{3}{4}$
	25	5	$1\frac{3}{4}$	14	$\frac{3}{4}$				$6\frac{3}{4}$	$5\frac{1}{4}$
58	46	$4\frac{1}{2}$	$1\frac{1}{2}$	$22^{0\frac{8}{7}}$	$3\frac{1}{2}$	$5\frac{5}{8}$	$1\frac{3}{4}$	$4\frac{1}{2}$	$\frac{13}{16}$	6
	32	$4\frac{1}{2}$	$1\frac{1}{2}$	$15^{3\frac{6}{7}}$	$1\frac{5}{8}$				$5\frac{1}{4}$	$5\frac{1}{4}$
59	63	10	3	$60^{4\frac{8}{7}}$	8	$11\frac{3}{4}$	4	10	$1\frac{13}{16}$	13
	36	10	3	$34^{5\frac{6}{7}}$	$2\frac{3}{4}$				$1\frac{13}{16}$	$11\frac{1}{8}$
60	56	6	2	$35^{8\frac{4}{7}}$	$4\frac{3}{8}$	$7\frac{3}{8}$	$2\frac{5}{8}$	6	$1\frac{1}{4}$	$8\frac{1}{4}$
	42	6	2	$26^{8\frac{8}{7}}$	$2\frac{3}{8}$				$1\frac{1}{4}$	$8\frac{1}{4}$
61	52	10	3	$49^{9\frac{2}{7}}$	$5\frac{3}{4}$	$11\frac{3}{4}$	4	10	$1\frac{13}{16}$	$11\frac{1}{2}$
	29	10	3	$27^{8\frac{4}{7}}$	$2\frac{1}{2}$				$11$	
62	50	10	3	48	$6\frac{1}{4}$	$11\frac{3}{4}$	4	10	$1\frac{13}{16}$	11
	25	10	3	24	$2\frac{3}{8}$				$1\frac{13}{16}$	$11\frac{1}{4}$
63	67	9	$2\frac{1}{4}$	$48^{2\frac{24}{35}}$	$4\frac{3}{4}$	$11\frac{1}{4}$	$3\frac{1}{4}$	9	$1\frac{3}{8}$	11
	50	9	$2\frac{1}{4}$	36	3				$9\frac{3}{4}$	$9\frac{3}{4}$
64	30	$2\frac{1}{2}$	$1\frac{1}{4}$	12	$2\frac{1}{8}$	$3\frac{1}{8}$	$1\frac{1}{8}$	$2\frac{1}{2}$	$\frac{9}{16}$	$3\frac{1}{2}$
	20	$2\frac{1}{2}$	$1\frac{1}{4}$	8	$\frac{3}{4}$				$2\frac{1}{2}$	$2\frac{1}{2}$
65	80	12	3	$76^{80}$	$8\frac{1}{4}$	$13\frac{5}{8}$	4	$11\frac{3}{4}$	$1\frac{7}{8}$	$14\frac{1}{2}$
	42	12	3	$40^{32}$					$13$	
66	60	12	$3\frac{1}{4}$	$62^{40}$	7	$14\frac{1}{4}$	$4\frac{1}{4}$	12	$1\frac{7}{8}$	15
	51	12	$3\frac{1}{4}$	$53^{04}$	$4\frac{1}{2}$				$13$	

## Bevel Core Wheels.

No.	Pattern.		Inch.	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.	
	No.	Teeth.											
67 {	70	14	3½	78 <sup>40</sup>	9½	16¾	4½	14	2	16	15	7¾	13½
	38	14	3½	42 <sup>56</sup>	3	6¾	2½	5	1	1			
68 {	59	5	1¾	33 <sup>04</sup>	4½	14	2½	12	12	12	15	7¾	13½
	41	5	1¾	22 <sup>96</sup>	1¾	14	4½	12	12	12			
69 {	56	12	3½	58 <sup>24</sup>	7½	14	4½	12	12	12	15	7¾	13½
	42	12	3½	43 <sup>68</sup>	4½	14	4½	12	12	12			

**Miter Wheels.**

No. Pattern.	No. of Teeth.	Face.	Pitch.	Diameter.	Backing.	Depth of Eye.
No.	Teeth.	Inch.	Inch.	Inch.	Inch.	Inch.
1	42	2 $\frac{1}{4}$	1 $\frac{1}{8}$	15 $^{12}$	1 $\frac{3}{4}$	3
2	38	2 $\frac{1}{2}$	1	12 $^{16}$	2 $\frac{1}{8}$	3 $\frac{3}{4}$
3	52	4	1 $\frac{1}{2}$	24 $^{96}$	3 $\frac{1}{4}$	5 $\frac{1}{8}$
4	56	2 $\frac{1}{2}$	1 $\frac{1}{8}$	20 $^{16}$	2 $\frac{1}{8}$	3 $\frac{1}{8}$
5	60	5	1 $\frac{1}{4}$	33 $^{60}$	3 $\frac{1}{2}$	6 $\frac{1}{8}$
6	67	7	2 $\frac{1}{4}$	48 $^{24}$	4 $\frac{5}{8}$	8 $\frac{1}{8}$
7	60	3	1 $\frac{1}{4}$	24	2 $\frac{1}{8}$	4 $\frac{1}{2}$
8	44	2 $\frac{3}{4}$	1 $\frac{1}{8}$	15 $^{84}$	1 $\frac{1}{2}$	3 $\frac{3}{8}$
9	30	2	1	9 $^{60}$	1 $\frac{1}{4}$	3 $\frac{1}{8}$
10	25	1 $\frac{1}{2}$	1 $\frac{3}{4}$	6	1 $\frac{1}{4}$	1 $\frac{3}{8}$
11	38	2	1	12 $^{16}$	1 $\frac{1}{2}$	2 $\frac{1}{8}$
12	43	2 $\frac{1}{2}$	1 $\frac{1}{8}$	15 $^{48}$	1 $\frac{7}{8}$	3 $\frac{1}{2}$
13	26	1 $\frac{3}{4}$	1 $\frac{1}{8}$	7 $^{28}$	7 $\frac{1}{8}$	2
14	54	3	1 $\frac{1}{8}$	19 $^{44}$	2 $\frac{3}{8}$	4 $\frac{1}{4}$
15	60	3 $\frac{1}{2}$	1 $\frac{3}{8}$	26 $^{40}$	2 $\frac{7}{8}$	5
16	62	2 $\frac{3}{4}$	1 $\frac{1}{8}$	22 $^{32}$	2 $\frac{1}{16}$	3 $\frac{1}{16}$
17	42	2 $\frac{3}{4}$	1 $\frac{1}{8}$	15 $^{12}$	1 $\frac{1}{3}$	3 $\frac{1}{2}$
18	64	6	1 $\frac{3}{4}$	35 $^{84}$	3 $\frac{3}{4}$	7 $\frac{1}{2}$
19	50	3 $\frac{1}{2}$	1 $\frac{1}{4}$	20	2 $\frac{1}{2}$	4 $\frac{3}{4}$
20	50	3	1 $\frac{1}{8}$	18	1 $\frac{1}{6}$	3 $\frac{3}{4}$
21	44	2 $\frac{1}{4}$	1	14 $^{08}$	1 $\frac{1}{4}$	2 $\frac{3}{4}$
22	63	4 $\frac{1}{2}$	1 $\frac{1}{8}$	30 $^{24}$	3 $\frac{1}{4}$	6
23	32	2	1 $\frac{1}{8}$	8 $^{96}$	1 $\frac{1}{8}$	3
24	24	2	1 $\frac{1}{8}$	8 $^{64}$	2 & 1	2 $\frac{1}{8}$ & 3 $\frac{1}{16}$

## Bevel Wheels.

No. Pattern.	No. of Teeth.	Face.	Pitch.	Diameter.	Backing.	Depth of Eye.
No.	Teeth.	Inch.	Inch.	Inch.	Inch.	Inch.
1	119	8	2	76 <sup>16</sup>	7 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>2</sub>
	40	8	2	25 <sup>60</sup>	2 <sup>1</sup> / <sub>4</sub>	9 <sup>9</sup> / <sub>16</sub>
2	107	8	2 <sup>1</sup> / <sub>4</sub>	77 <sup>04</sup>	7 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>2</sub>
	43	8	2 <sup>1</sup> / <sub>4</sub>	30 <sup>96</sup>	2 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>8</sub>
3	70	8	2	44 <sup>80</sup>	5 <sup>1</sup> / <sub>4</sub>	9 <sup>1</sup> / <sub>2</sub>
	52	8	2	33 <sup>28</sup>	3 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>3</sub>
4	56	8	2	35 <sup>84</sup>	4 <sup>1</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>2</sub>
	39	8	2	24 <sup>96</sup>	2 <sup>1</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>3</sub>
5	106	6	1 <sup>3</sup> / <sub>4</sub>	59 <sup>36</sup>	5	7 <sup>1</sup> / <sub>4</sub>
	70	6	1 <sup>3</sup> / <sub>4</sub>	39 <sup>20</sup>	2 <sup>3</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>2</sub>
6	81	4	1 <sup>3</sup> / <sub>8</sub>	35 <sup>64</sup>	4 <sup>3</sup> / <sub>4</sub>	5 <sup>1</sup> / <sub>2</sub>
	27	4	1 <sup>3</sup> / <sub>8</sub>	11 <sup>88</sup>	1 <sup>3</sup> / <sub>8</sub>	4 <sup>3</sup> / <sub>8</sub>
7	96	3	1 <sup>1</sup> / <sub>8</sub>	34 <sup>56</sup>	3 <sup>7</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>2</sub>
	34	3	1 <sup>1</sup> / <sub>8</sub>	12 <sup>24</sup>	1 <sup>1</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>8</sub>
8	96	2 <sup>3</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>4</sub>	38 <sup>40</sup>	4	4 <sup>1</sup> / <sub>8</sub>
	23	2 <sup>3</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>4</sub>	9 <sup>20</sup>	1	3 <sup>8</sup> / <sub>8</sub>
9	60	3 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>4</sub>	24	3 <sup>1</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>8</sub>
	42	3 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>4</sub>	16 <sup>80</sup>	2 <sup>1</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>8</sub>
10	57	3	1 <sup>1</sup> / <sub>4</sub>	22 <sup>80</sup>	3	4 <sup>1</sup> / <sub>4</sub>
	40	3	1 <sup>1</sup> / <sub>4</sub>	16	2	3 <sup>3</sup> / <sub>4</sub>
11	46	3	1 <sup>1</sup> / <sub>4</sub>	18 <sup>40</sup>	2 <sup>5</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>4</sub>
	24	3	1 <sup>1</sup> / <sub>4</sub>	9 <sup>60</sup>	1 <sup>1</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>4</sub>
12	64	3	1 <sup>1</sup> / <sub>8</sub>	23 <sup>04</sup>	2 <sup>7</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>4</sub>
	40	3	1 <sup>1</sup> / <sub>8</sub>	14 <sup>40</sup>	2	4 <sup>3</sup> / <sub>8</sub>
13	46	3	1 <sup>1</sup> / <sub>8</sub>	16 <sup>56</sup>	2 <sup>3</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>8</sub>
	45	3	1 <sup>1</sup> / <sub>8</sub>	16 <sup>20</sup>	2 <sup>3</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>8</sub>
14	45	3 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>4</sub>	18	2 <sup>3</sup> / <sub>4</sub>	4 <sup>3</sup> / <sub>4</sub>
	44	3 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>4</sub>	17 <sup>60</sup>	2 <sup>8</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>4</sub>
15	61	9	2 <sup>1</sup> / <sub>2</sub>	48 <sup>80</sup>	5 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>4</sub>
	60	9	2 <sup>1</sup> / <sub>2</sub>	48	5 <sup>1</sup> / <sub>2</sub>	11
16	70	3	1 <sup>1</sup> / <sub>4</sub>	25 <sup>20</sup>	3 <sup>1</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>4</sub>
	40	3	1 <sup>1</sup> / <sub>4</sub>	14 <sup>40</sup>	1 <sup>5</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>4</sub>

**Bevel Wheels.**

No. Pattern.	No. of Teeth.	Face.	Pitch.	Diameter.	Backing.	Depth of Eye.
No.	Teeth.	Inch.	Inch.	Inch.	Inch.	Inch.
17	73	3	1 $\frac{1}{8}$	26 <sup>28</sup>	3 $\frac{1}{4}$	4 $\frac{1}{4}$
	37	3	1 $\frac{1}{8}$	13 <sup>32</sup>	1 $\frac{5}{8}$	4 $\frac{3}{8}$
18	51	4	1 $\frac{3}{8}$	22 <sup>44</sup>	3 $\frac{1}{4}$	5 $\frac{1}{8}$
	40	4	1 $\frac{3}{8}$	17 <sup>60</sup>	2 $\frac{1}{2}$	5 $\frac{3}{8}$
19	67	2 $\frac{3}{4}$	1	21 <sup>44</sup>	2 $\frac{5}{8}$	4
	50	2 $\frac{3}{4}$	1	16	2 $\frac{1}{8}$	4 $\frac{1}{4}$
20	60	3	1 $\frac{1}{4}$	24	2 $\frac{3}{4}$	4 $\frac{3}{8}$
	50	3	1 $\frac{1}{4}$	20	2 $\frac{3}{4}$	4 $\frac{3}{8}$
21	60	5	1 $\frac{3}{4}$	33 <sup>60</sup>	3 $\frac{7}{8}$	6 $\frac{1}{2}$
	54	5	1 $\frac{3}{4}$	30 <sup>24</sup>	3 $\frac{3}{8}$	6 $\frac{3}{4}$
22	96	2	1	30 <sup>72</sup>	3 $\frac{1}{4}$	3 $\frac{1}{2}$
	22	2	1	7 <sup>04</sup>	1 $\frac{1}{8}$	3
23	60	4	1 $\frac{1}{2}$	28 <sup>80</sup>	3 $\frac{5}{8}$	5 $\frac{3}{4}$
	50	4	1 $\frac{1}{2}$	24	3	4 $\frac{3}{8}$
24	50	3	1 $\frac{1}{4}$	20	2 $\frac{1}{2}$	4 $\frac{1}{2}$
	45	3	1 $\frac{1}{4}$	18	2 $\frac{3}{8}$	5 $\frac{1}{4}$
25	96	3 $\frac{3}{4}$	1 $\frac{1}{8}$	42 <sup>24</sup>	4 $\frac{5}{8}$	10 $\frac{3}{4}$
	34	3 $\frac{3}{4}$	1 $\frac{1}{8}$	14 <sup>96</sup>	1 $\frac{3}{4}$	5 $\frac{1}{4}$
26	105	9	2 $\frac{1}{2}$	84	7 $\frac{5}{8}$	11 $\frac{1}{4}$
	60	9	2 $\frac{1}{2}$	48	3 $\frac{3}{4}$	4 $\frac{1}{8}$
27	90	2 $\frac{3}{4}$	1 $\frac{1}{8}$	32 <sup>40</sup>	4 $\frac{7}{8}$	3 $\frac{7}{8}$
	20	2 $\frac{3}{4}$	1 $\frac{1}{8}$	7 <sup>20</sup>	1	4 $\frac{1}{4}$
28	60	3	1 $\frac{1}{4}$	24	2 $\frac{3}{4}$	4 $\frac{1}{4}$
	53	3	1 $\frac{1}{4}$	21 <sup>20</sup>	2 $\frac{3}{8}$	4 $\frac{7}{8}$
29	33	2 $\frac{1}{2}$	1 $\frac{1}{2}$	15 <sup>84</sup>	2 $\frac{3}{4}$	3 $\frac{7}{8}$
	26	2 $\frac{1}{2}$	1 $\frac{1}{2}$	12 <sup>48</sup>	2	3 $\frac{7}{8}$
30	60	4	1 $\frac{1}{2}$	28 <sup>80</sup>	3 $\frac{3}{4}$	5 $\frac{5}{8}$
	39	4	1 $\frac{1}{2}$	18 <sup>72</sup>	2 $\frac{3}{8}$	5 $\frac{5}{8}$
31	44	2 $\frac{3}{4}$	1 $\frac{1}{8}$	15 <sup>84</sup>	2 $\frac{1}{4}$	3 $\frac{7}{8}$
	25	2 $\frac{3}{4}$	1 $\frac{1}{8}$	9	1 $\frac{5}{6}$	4
32	60	3 $\frac{1}{2}$	1 $\frac{1}{4}$	24	3 $\frac{1}{2}$	4 $\frac{3}{8}$
	32	3 $\frac{1}{2}$	1 $\frac{1}{4}$	12 <sup>80</sup>	1 $\frac{1}{8}$	4 $\frac{3}{8}$

## Bevel Wheels.

Pattern No.	No. Teeth. Teeth.	Inch. Face.	Inch. Pitch.	Inch. Diameter.	Inch. Backing.	Depth of Eye. Inch.
						Depth of Eye. Inch.
33	90	3	1 <sup>1</sup> / <sub>8</sub>	32 <sup>40</sup>	3 <sup>3</sup> / <sub>8</sub>	3 <sup>7</sup> / <sub>8</sub>
	25	3	1 <sup>1</sup> / <sub>8</sub>	9	3 <sup>3</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>8</sub>
34	50	2 <sup>1</sup> / <sub>2</sub>	1	16	2 <sup>3</sup> / <sub>6</sub>	3 <sup>1</sup> / <sub>4</sub>
	30	2 <sup>1</sup> / <sub>2</sub>	1	9 <sup>60</sup>	1 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>4</sub>
35	41	2 <sup>1</sup> / <sub>4</sub>	1	13 <sup>12</sup>	1 <sup>1</sup> / <sub>16</sub>	3
	35	2 <sup>1</sup> / <sub>4</sub>	1	11 <sup>20</sup>	1 <sup>3</sup> / <sub>8</sub>	2 <sup>7</sup> / <sub>8</sub>
36	58	4 <sup>1</sup> / <sub>2</sub>	1 <sup>5</sup> / <sub>8</sub>	30 <sup>16</sup>	2 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>4</sub>
	55	4 <sup>1</sup> / <sub>2</sub>	1 <sup>5</sup> / <sub>8</sub>	28 <sup>60</sup>	2 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>4</sub>
37	80	9	2 <sup>1</sup> / <sub>4</sub>	57 <sup>60</sup>	2 <sup>7</sup> / <sub>8</sub>	9 <sup>7</sup> / <sub>8</sub>
	54	9	2 <sup>1</sup> / <sub>4</sub>	38 <sup>88</sup>	3	9 <sup>7</sup> / <sub>8</sub>
38	72	3	1 <sup>1</sup> / <sub>8</sub>	25 <sup>92</sup>	1	3 <sup>3</sup> / <sub>4</sub>
	32	3	1 <sup>1</sup> / <sub>8</sub>	11 <sup>52</sup>	4 <sup>1</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>4</sub>
39	63	4 <sup>1</sup> / <sub>2</sub>	1 <sup>5</sup> / <sub>8</sub>	32 <sup>76</sup>	3 <sup>5</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>2</sub>
	56	4 <sup>1</sup> / <sub>2</sub>	1 <sup>5</sup> / <sub>8</sub>	29 <sup>12</sup>	4 <sup>1</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>2</sub>
40	62	6	1 <sup>3</sup> / <sub>4</sub>	34 <sup>72</sup>	4	8
	60	6	1 <sup>3</sup> / <sub>4</sub>	33 <sup>60</sup>	4	8
41	66	3 <sup>3</sup> / <sub>4</sub>	1 <sup>3</sup> / <sub>8</sub>	29 <sup>04</sup>	4 <sup>3</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>4</sub>
	26	3 <sup>3</sup> / <sub>4</sub>	1 <sup>3</sup> / <sub>8</sub>	11 <sup>44</sup>	1 <sup>1</sup> / <sub>4</sub>	4 <sup>7</sup> / <sub>8</sub>
42	66	4 <sup>1</sup> / <sub>2</sub>	1 <sup>5</sup> / <sub>8</sub>	34 <sup>32</sup>	4 <sup>1</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>4</sub>
	26	4 <sup>1</sup> / <sub>2</sub>	1 <sup>5</sup> / <sub>8</sub>	13 <sup>52</sup>	1 <sup>3</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>8</sub>
43	46	2 <sup>1</sup> / <sub>4</sub>	1	14 <sup>72</sup>	2 <sup>3</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>4</sub>
	32	2 <sup>1</sup> / <sub>4</sub>	1	10 <sup>24</sup>	1 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>8</sub>
44	66	3	1 <sup>1</sup> / <sub>8</sub>	23 <sup>76</sup>	3 <sup>1</sup> / <sub>2</sub>	4
	26	3	1 <sup>1</sup> / <sub>8</sub>	9 <sup>36</sup>	1	5
45	90	3 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>4</sub>	36	4 <sup>5</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>4</sub>
	25	3 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>4</sub>	10	3 <sup>3</sup> / <sub>4</sub>	4
46	80	3	1 <sup>1</sup> / <sub>8</sub>	28 <sup>80</sup>	3 <sup>1</sup> / <sub>2</sub>	4
	27	3	1 <sup>1</sup> / <sub>8</sub>	9 <sup>72</sup>	1	4
47	34	2 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub>	16	2 <sup>3</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>6</sub>
	25	2 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub>	12	1 <sup>5</sup> / <sub>8</sub>	3 <sup>2</sup> / <sub>8</sub>
48	38	2	1	12 <sup>16</sup>	2 <sup>1</sup> / <sub>4</sub>	2 <sup>7</sup> / <sub>8</sub>
	19	2	1	6 <sup>08</sup>	1 <sup>5</sup> / <sub>6</sub>	2 <sup>7</sup> / <sub>8</sub>

## Bevel Wheels.

Pattern.	No. Teeth.	Face.	Pitch.	Diameter.	Backing.	Depth of Eye
No.	Teeth.	Inch.	Inch.	Inch.	Inch.	Inch.
49	40	3	1 $\frac{1}{8}$	14 <sup>40</sup>	2 $\frac{3}{16}$	3 $\frac{1}{16}$
	34	3	1 $\frac{1}{8}$	12 <sup>24</sup>	1 $\frac{3}{4}$	3 $\frac{1}{16}$
*A	40	2 $\frac{1}{4}$	1 $\frac{1}{4}$	16	2 $\frac{5}{8}$	3 $\frac{1}{4}$
	20	2 $\frac{1}{4}$	1 $\frac{1}{4}$	8	1 $\frac{3}{8}$	3 $\frac{1}{8}$
†B	45	2 $\frac{1}{2}$	1	14 <sup>40</sup>	1 $\frac{3}{4}$	3 $\frac{3}{8}$
	38	2 $\frac{1}{2}$	1	12 <sup>16</sup>	1 $\frac{1}{2}$	3 $\frac{3}{8}$
50	90	4 $\frac{1}{2}$	1 $\frac{1}{2}$	43 <sup>20</sup>	5 $\frac{3}{8}$	5 $\frac{7}{8}$
	25	4 $\frac{1}{2}$	1 $\frac{1}{2}$	12	1 $\frac{5}{16}$	5 $\frac{7}{16}$
51	60	2 $\frac{1}{2}$	1 $\frac{1}{8}$	21 <sup>60</sup>	3 $\frac{5}{16}$	3 $\frac{1}{2}$
	15	2 $\frac{1}{2}$	1 $\frac{1}{8}$	5 <sup>40</sup>	1 $\frac{1}{6}$	3 $\frac{3}{8}$
52	93	8	2	59 <sup>52</sup>	7 $\frac{5}{8}$	9 $\frac{1}{2}$
	34	8	2	21 <sup>76</sup>	1 $\frac{1}{2}$	9
53	100	10	2 $\frac{1}{2}$	80	8 $\frac{7}{8}$	11 $\frac{5}{8}$
	43	10	2 $\frac{1}{2}$	34 <sup>40</sup>	2 $\frac{3}{16}$	11 $\frac{1}{8}$
54	50	2 $\frac{1}{2}$	1	16	1 $\frac{1}{16}$	3 $\frac{5}{8}$
	45	2 $\frac{1}{2}$	1	14 <sup>40</sup>	1 $\frac{9}{16}$	3 $\frac{3}{8}$
55	75	8	2	48	5 $\frac{1}{2}$	9 $\frac{3}{8}$
	50	8	2	32	2 $\frac{3}{4}$	9 $\frac{1}{8}$
56	50	3	1 $\frac{1}{8}$	18	2 $\frac{3}{16}$	3 $\frac{7}{8}$
	40	3	1 $\frac{1}{8}$	14 <sup>40</sup>	1 $\frac{5}{8}$	3 $\frac{7}{8}$
57	43	3 $\frac{1}{2}$	1	13 <sup>76</sup>	3 $\frac{5}{16}$	4 $\frac{5}{16}$
	15	3 $\frac{1}{2}$	1	4 <sup>80</sup>	1 $\frac{3}{16}$	4
58	57	5	1 $\frac{3}{4}$	31 <sup>92</sup>	3 $\frac{1}{16}$	6 $\frac{1}{8}$
	43	5	1 $\frac{3}{4}$	24 <sup>08</sup>	2 $\frac{5}{16}$	6
59	53	2 $\frac{3}{4}$	1	16 <sup>96</sup>	2	3 $\frac{5}{8}$
	42	2 $\frac{3}{4}$	1	13 <sup>44</sup>	1 $\frac{1}{2}$	3 $\frac{5}{8}$
60	50	3 $\frac{1}{2}$	1 $\frac{1}{4}$	20	3	4 $\frac{1}{2}$
	30	3 $\frac{1}{2}$	1 $\frac{1}{4}$	12	1 $\frac{3}{8}$	4 $\frac{3}{8}$
61	88	9	2 $\frac{1}{4}$	63 <sup>36</sup>	7 $\frac{1}{16}$	10 $\frac{3}{8}$
	40	9	2 $\frac{1}{4}$	28 <sup>80</sup>	2 $\frac{1}{8}$	9 $\frac{7}{8}$

\* Center lines at an angle of 4 inches in eleven feet.

† " " " " five-sixteenths of an inch to the foot.

## Bevel Wheels.

Pattern.	No. Teeth.	Face.	Pitch.	Diameter.	Backing.	Depth of Eye
No.	Teeth.	Inch.	Inch.	Inch.	Inch.	Inch.
62 {	80	3½	1¼	32	4½	4⁷/₈
	27	3½	1¼	10⁸/₀	1⁵/₆	4³/₈
63 {	68	9	2¼	48⁹/₆	7¾	10⁵/₈
	33	9	2¼	23⁷/₆	2	10¹/₄
64 {	45	2½	1	14⁴/₀	1¾	3³/₄
	38	2½	1	12¹/₆	1½	3²/₃
65 {	45	2½	1	14⁴/₀	1¹¹/₆	3¹/₄
	42	2½	1	13⁴/₄	1½	3¹/₄
66 {	90	2½	1	28⁸/₀	3¼	4
	25	2½	1	8	7/₈	3³/₈
67 {	57	2½	1	18²/₄	2½	3¹/₄
	28	2½	1	8⁹/₆	1	3¹/₄
68 {	84	4½	1¾	47⁰/₄	4²/₄	5¹/₄
	27	4½	1¾	15¹/₂	1	5¹/₄
69 {	50	1¾	1	16	2	2
	11	1¾	1	3⁵/₂	1⁴/₄	1⁷/₈
70 {	66	2½	1	21¹/₂	2⁵/₈	3¹/₄
	26	2½	1	8³/₂	7/₈	3¹/₄
71 {	74	4½	1½	35⁵/₂	4⁵/₈	5¹/₂
	27	4½	1½	12⁹/₆	1	5¹/₄
72 {	74	3½	1½	29⁶/₀	3²/₄	4½
	27	3½	1½	10⁸/₀	7/₈	4½
73 {	74	3	1½	26⁶/₄	3⁵/₈	4
	27	3	1½	9⁷/₂	7/₈	3³/₄
74 {	80	2½	1	25⁶/₀	3⁷/₈	3¹/₂
	27	2½	1	8⁶/₄	4³/₄	3¹/₄
75 {	45	3	1½	16²/₀	2¹/₈	4
	42	3	1½	15¹/₂	2	4

## Bevel Wheels.

Pattern.	No. Teeth.	Face.	Pitch.	Diameter.	Backing.	Depth of Eye
No.	Teeth.	Inch.	Inch.	Inch.	Inch.	Inch.
76	51	3	1 $\frac{1}{8}$	18 $^{\frac{3}{6}}$	2 $\frac{1}{8}$	3 $\frac{3}{4}$
	42	3	1 $\frac{1}{8}$	15 $^{\frac{1}{2}}$	1 $\frac{5}{8}$	3 $\frac{3}{4}$
*C	50	2 $\frac{1}{2}$	1	16	1 $\frac{3}{4}$	3 $\frac{3}{8}$
	38	2 $\frac{1}{2}$	1	12 $^{\frac{1}{6}}$	1 $\frac{1}{2}$	3 $\frac{3}{8}$
77	50	2 $\frac{1}{2}$	1	16	1 $\frac{3}{4}$	3 $\frac{3}{8}$
	38	2 $\frac{1}{2}$	1	12 $^{\frac{1}{6}}$	1 $\frac{1}{2}$	3 $\frac{3}{8}$
78	54	2 $\frac{1}{2}$	1	17 $^{\frac{2}{8}}$	2 $\frac{1}{8}$	3 $\frac{1}{4}$
	36	2 $\frac{1}{2}$	1	11 $^{\frac{5}{2}}$	1 $\frac{3}{6}$	3 $\frac{1}{4}$
79	50	2 $\frac{1}{2}$	1	16	2 $\frac{3}{8}$	3 $\frac{1}{4}$
	25	2 $\frac{1}{2}$	1	8	1 $\frac{5}{6}$	4 $\frac{1}{4}$
80	63	3 $\frac{1}{2}$	1 $\frac{1}{2}$	30 $^{\frac{2}{4}}$	4	4 $\frac{1}{4}$
	20	3 $\frac{1}{2}$	1 $\frac{1}{2}$	9 $^{\frac{6}{0}}$	$\frac{7}{8}$	4 $\frac{1}{4}$
81	50	2	1 $\frac{7}{8}$	14	3	3 $\frac{1}{2}$
	18	2	1 $\frac{7}{8}$	5 $^{\frac{0}{4}}$	$\frac{11}{6}$	2 $\frac{3}{4}$
82	45	2 $\frac{1}{4}$	1	14 $^{\frac{4}{0}}$	2 $\frac{3}{8}$	3
	19	2 $\frac{1}{4}$	1	6 $^{\frac{0}{8}}$	1 $\frac{3}{6}$	3
83	65	3 $\frac{1}{4}$	1 $\frac{1}{8}$	23 $^{\frac{4}{0}}$	3 $\frac{1}{8}$	4
	28	3 $\frac{1}{4}$	1 $\frac{1}{8}$	10 $^{\frac{0}{8}}$	1	4
84	66	3 $\frac{1}{2}$	1 $\frac{1}{4}$	26 $^{\frac{4}{0}}$	3 $\frac{1}{2}$	4 $\frac{1}{4}$
	26	3 $\frac{1}{2}$	1 $\frac{1}{4}$	10 $^{\frac{4}{0}}$	1 $\frac{5}{6}$	4 $\frac{1}{4}$
85	50	4	1 $\frac{1}{2}$	24	2 $\frac{3}{4}$	5
	45	4	1 $\frac{1}{2}$	21 $^{\frac{6}{0}}$	2 $\frac{3}{8}$	5
86	36	1	1 $\frac{3}{4}$	8 $^{\frac{6}{4}}$	4 $^{\frac{3}{2}}$	2
	18	1	1 $\frac{3}{4}$	4 $^{\frac{3}{2}}$	1	1 $\frac{5}{8}$
87	37	1 $\frac{1}{4}$	1 $\frac{3}{4}$	8 $^{\frac{8}{8}}$		3 $\frac{3}{4}$
	14	1 $\frac{1}{4}$	1 $\frac{3}{4}$	3 $^{\frac{3}{6}}$		3 $\frac{3}{4}$
88	50	3	1 $\frac{1}{8}$	18	2	3 $\frac{3}{4}$
	45	3	1 $\frac{1}{8}$	16 $^{\frac{2}{0}}$	1 $\frac{11}{16}$	3 $\frac{3}{4}$
89	90	3 $\frac{1}{2}$	1 $\frac{1}{4}$	36	4 $\frac{1}{4}$	4 $\frac{1}{4}$
	15	3 $\frac{1}{2}$	1 $\frac{1}{4}$	6	$\frac{9}{16}$	4 $\frac{1}{4}$
90	96	2 $\frac{1}{2}$	1 $\frac{1}{8}$	34 $^{\frac{5}{6}}$	3 $\frac{3}{4}$	3
	18	2 $\frac{1}{2}$	1 $\frac{1}{8}$	6 $^{\frac{4}{8}}$	$\frac{9}{16}$	3 $\frac{1}{4}$
91	63	2 $\frac{1}{2}$	1 $\frac{1}{8}$	22 $^{\frac{6}{8}}$	3 $\frac{3}{16}$	3 $\frac{1}{2}$
	20	2 $\frac{1}{2}$	1 $\frac{1}{8}$	7 $^{\frac{2}{0}}$	$\frac{11}{16}$	3 $\frac{1}{4}$
92	50	2 $\frac{1}{2}$	1	16	1 $\frac{15}{16}$	3 $\frac{1}{4}$
	40	2 $\frac{1}{2}$	1	12 $^{\frac{3}{0}}$	1 $\frac{7}{16}$	3 $\frac{1}{4}$
93						
94	63	4 $\frac{3}{4}$	1 $\frac{5}{8}$	32 $^{\frac{7}{6}}$	4	5 $\frac{3}{4}$
	36	4 $\frac{3}{4}$	1 $\frac{5}{8}$	18 $^{\frac{7}{2}}$	1 $\frac{5}{8}$	5 $\frac{1}{2}$

\*Centre line at an acute angle of  $\frac{5}{6}$  in. to the foot.

## Bevel Wheels.

Pattern.	No. Teeth.	Face.	Pitch.	Diameter.	Backing.	Depth of Eye
No.	Teeth.	Inch.	Inch.	Inch.	Inch.	Inch.

## Spur Wheels.

No. Pattern.	No. of Teeth.	Face.	Pitch.	Diameter.	Depth of Eye	Weight.
No.	Teeth.	Inch.	Inch.	Inch.	Inch.	lbs.
1	170	1 $\frac{3}{4}$		40 <sup>80</sup>	3 $\frac{1}{2}$	
2	150	2 $\frac{1}{4}$		36	4	
3	150	1 $\frac{3}{4}$		36	3 $\frac{1}{2}$	
4	100	2		24	3 $\frac{1}{4}$	
5	85	2		20 <sup>40</sup>	3 $\frac{1}{4}$	
6	67	2		16 <sup>08</sup>	3 $\frac{1}{4}$	
7	63	2		15 <sup>12</sup>	3 $\frac{1}{4}$	
8	40	2		9 <sup>60</sup>	3 $\frac{1}{4}$	
9	30	2		7 <sup>20</sup>	4	
10	139	2		33 <sup>36</sup>	3 $\frac{1}{2}$	
11	130	2		31 <sup>20</sup>	3 $\frac{1}{2}$	
12	90	3		36	4 $\frac{3}{4}$	
13	31	3		12 <sup>40</sup>	3 $\frac{1}{4}$	
14	100	3 $\frac{1}{2}$		44	5 $\frac{1}{2}$	
15	22	3 $\frac{1}{2}$		9 <sup>68</sup>	4 $\frac{1}{2}$	
16	15	3		7 <sup>20</sup>	3 $\frac{1}{2}$	
17	50	2		12	3 $\frac{1}{2}$	
18	120	2		28 <sup>80</sup>	3 $\frac{1}{4}$	
19	160	2		38 <sup>40</sup>	3 $\frac{1}{4}$	
20	76	2		18 <sup>24</sup>	3 $\frac{1}{4}$	
21	45	3		18	3 $\frac{1}{4}$	
22	25	2		6	2 $\frac{1}{4}$	
23	18	3		7 <sup>20</sup>	2 $\frac{1}{4}$	
24	17	2		4 <sup>08</sup>	2 $\frac{1}{4}$	
25	44	1 $\frac{1}{2}$		8 <sup>80</sup>	1 $\frac{1}{2}$	
26	14	1 $\frac{1}{2}$		2 <sup>80</sup>	1 $\frac{1}{2}$	
27	13	3		23 <sup>52</sup>	2 $\frac{1}{4}$	
28	64	2 $\frac{1}{2}$		4 <sup>68</sup>	2 $\frac{1}{4}$	
29	13	2 $\frac{1}{2}$		13 <sup>44</sup>	2 $\frac{1}{4}$	
30	42	2 $\frac{1}{4}$				

## Spur Wheels.

Pattern.	No. Teeth.	Face.	Pitch.	Diameter.	Depth of Eye.	Weight.
No.	Teeth.	Inch.	Inch.	Inch.	Inch.	Lbs.
31	30	2 $\frac{1}{4}$	1	9 <sup>60</sup>	3 $\frac{1}{4}$	
32	18	2 $\frac{1}{4}$	1	5 <sup>76</sup>	3	
33	14	3 $\frac{1}{2}$	1 $\frac{3}{4}$	6 <sup>16</sup>	4 $\frac{1}{4}$	
34	20	2	1 $\frac{3}{4}$	4 <sup>80</sup>	2 $\frac{3}{4}$	
35	56	2	1 $\frac{3}{4}$	13 <sup>44</sup>	2 $\frac{3}{4}$	
*36	137	2	1 $\frac{7}{8}$	38 <sup>36</sup>	3 $\frac{1}{2}$	
*37	119	2	1 $\frac{7}{8}$	33 <sup>32</sup>	3 $\frac{1}{2}$	
*38	103	2	1 $\frac{7}{8}$	28 <sup>84</sup>	3 $\frac{1}{2}$	
*39	73	2	1 $\frac{7}{8}$	20 <sup>44</sup>	3 $\frac{1}{4}$	
*40	86	2	1 $\frac{7}{8}$	24 <sup>08</sup>	3 $\frac{1}{4}$	
*41	96	2	1 $\frac{7}{8}$	26 <sup>88</sup>	3 $\frac{3}{4}$	
†42	38	2	1 $\frac{7}{8}$	9 <sup>12</sup>	3 $\frac{1}{2}$	
†43	100	2	1 $\frac{7}{8}$	24	2 $\frac{3}{8}$	
†44	14	2	1 $\frac{8}{4}$	3 <sup>36</sup>	2 $\frac{1}{2}$	
†45	15	2 $\frac{1}{2}$	1	4 <sup>80</sup>	2 $\frac{1}{2}$	
46	25	3	1 $\frac{1}{4}$	10	3	
47	44	2	1 $\frac{3}{4}$	10 <sup>56</sup>	3 $\frac{1}{8}$	
*48	48	2	1 $\frac{7}{8}$	13 <sup>44</sup>	3 $\frac{1}{4}$	
49	43	3	1 $\frac{1}{4}$	17 <sup>20</sup>	4 $\frac{1}{4}$	
50	76	3	1 $\frac{1}{4}$	30 <sup>40</sup>	4 $\frac{1}{2}$	
51	11	3 $\frac{1}{2}$	1 $\frac{2}{3}$	4 <sup>84</sup>	4 $\frac{3}{8}$	
52	20	3	1 $\frac{1}{4}$	8	3 $\frac{7}{8}$	
53	84	3	1 $\frac{1}{4}$	33 <sup>60</sup>	4 $\frac{1}{8}$	
54	39	3	1 $\frac{1}{4}$	15 <sup>60</sup>	3 $\frac{3}{4}$	
*55	57	2	1 $\frac{7}{8}$	15 <sup>96</sup>	3 $\frac{1}{4}$	
*56	16	2	1 $\frac{7}{8}$	4 <sup>48</sup>	2 $\frac{3}{4}$	
57	13	2	1 $\frac{3}{4}$	3 <sup>12</sup>	2 $\frac{3}{4}$	
58	23	2	1 $\frac{3}{4}$	5 <sup>52</sup>	2 $\frac{3}{4}$	
*59	119	2 $\frac{1}{2}$	1 $\frac{7}{8}$	33 <sup>32</sup>	4	
*60	103	2 $\frac{1}{2}$	1 $\frac{7}{8}$	28 <sup>84</sup>	4	
61	21	2 $\frac{1}{2}$	1 $\frac{1}{8}$	7 <sup>56</sup>	3 $\frac{3}{8}$	
62	18	4	2	11 <sup>52</sup>	4 $\frac{7}{8}$	

\* Long Teeth.

† Long Teeth, Arms Ribbed.

## Spur Wheels.

Pattern.	No. Teeth.	Face.	Pitch.	Diameter.	Depth of Eye.	Weight.
No.	Teeth.	Inch.	Inch.	Inch.	Inch.	Lbs.
63	75	3 $\frac{1}{2}$	1 $\frac{3}{8}$	33	4 $\frac{3}{4}$	
64	47	3 $\frac{1}{2}$	1 $\frac{3}{8}$	20 <sup>68</sup>	4 $\frac{1}{2}$	
65	75	4	1 $\frac{1}{2}$	36	5 $\frac{5}{16}$	
66	72	4	1 $\frac{1}{2}$	34 <sup>56</sup>	5 $\frac{5}{16}$	
67	52	4	1 $\frac{1}{2}$	24 <sup>96</sup>	5 $\frac{1}{8}$	
68	50	4	1 $\frac{1}{2}$	24	5 $\frac{1}{8}$	
69	25	4	1 $\frac{1}{2}$	12	4 $\frac{7}{8}$	
70	120	3	1 $\frac{1}{4}$	48	4 $\frac{1}{2}$	
71	14	3	1 $\frac{1}{4}$	5 <sup>60</sup>	3 $\frac{7}{8}$	
72	35	4	1 $\frac{1}{2}$	16 <sup>80</sup>	5 $\frac{1}{8}$	
73	30	4	1 $\frac{1}{2}$	14 <sup>40</sup>	5 $\frac{1}{16}$	
74	81	6	1 $\frac{5}{8}$	42 <sup>12</sup>	7 $\frac{7}{16}$	
75	42	6	1 $\frac{5}{8}$	21 <sup>84</sup>	7 $\frac{1}{4}$	
76	25	6	1 $\frac{5}{8}$	13	6 $\frac{1}{16}$	
77	25	2	7 $\frac{7}{8}$	7	2 $\frac{3}{4}$	
78	28	2	3 $\frac{3}{4}$	6 <sup>72</sup>	2 $\frac{3}{4}$	
*79	38	5 $\frac{1}{2}$	3	36 <sup>48</sup>	6 $\frac{3}{4}$	
80	15	4	1 $\frac{1}{2}$	7 <sup>20</sup>	4 $\frac{3}{4}$	
81	138	1	1 $\frac{1}{2}$	23	2	
82	92	1	1 $\frac{1}{2}$	15 $\frac{1}{8}$	2	
83	52	3	1 $\frac{1}{4}$	20 <sup>80</sup>	4 $\frac{1}{4}$	
84	57	3	1 $\frac{1}{4}$	22 <sup>80</sup>	4 $\frac{1}{4}$	
85	35	3	1 $\frac{1}{4}$	14	4	
86	50	1 $\frac{1}{2}$	3 $\frac{3}{4}$	12	2 $\frac{1}{2}$	
87	17	1 $\frac{1}{2}$	3 $\frac{3}{4}$	4 <sup>08</sup>	2 $\frac{1}{2}$	
88	61	6 $\frac{1}{4}$	2 $\frac{1}{2}$	48 <sup>80</sup>	7	
89	38	6 $\frac{1}{4}$	2 $\frac{1}{2}$	30 <sup>40</sup>	7	
90	17	4	1 $\frac{1}{2}$	8 <sup>16</sup>	5 $\frac{1}{4}$	
91	74	3	1 $\frac{1}{4}$	29 <sup>60</sup>	4 $\frac{3}{4}$	
92	29	1	1 $\frac{1}{2}$	4 <sup>64</sup>	1	
93	20	1	1 $\frac{1}{2}$	3 <sup>20</sup>	1	
94	13	1	1 $\frac{1}{2}$	2 <sup>08</sup>	1	
95	26	1	1 $\frac{1}{2}$	4 <sup>16</sup>	1	

\*79 Works in Concentric Segment 102 Teeth.

## Spur Wheels.

Pattern. No.	No. Teeth. Teeth.	Face. Inch.	Pitch. Inch.	Diameter. Inch.	Depth of Eye. Inch.	Weight. Lbs.
96	17	1	$1\frac{1}{2}$	$2^{72}$	1	
97	23	1	$1\frac{1}{2}$	$3^{68}$	1	
98	54	1	$1\frac{1}{2}$	$8^{64}$	1	
†99	30	3	$1\frac{1}{4}$	12	$3\frac{1}{2}$	
*†100	66	2	$1\frac{7}{8}$	$18^{48}$	$3\frac{1}{2}$	
*†101	33	2	$1\frac{7}{8}$	$9^{24}$	$3\frac{1}{2}$	
†102	28	3	$1\frac{1}{4}$	$11^{20}$	$3\frac{3}{4}$	
†103	22	3	$1\frac{1}{4}$	$8^{80}$	$3\frac{3}{4}$	
†104	32	3	$1\frac{1}{4}$	$12^{80}$	$3\frac{3}{4}$	
†105	38	3	$1\frac{1}{4}$	$15^{20}$	$3\frac{3}{4}$	
106	21	4	$1\frac{1}{2}$	$10^{08}$	$4\frac{3}{4}$	
†107	37	4	$1\frac{1}{4}$	$14^{80}$	$4\frac{3}{4}$	
†108	43	4	$1\frac{1}{4}$	$17^{20}$	$4\frac{3}{4}$	
†109	40	2	$\frac{7}{8}$	$11^{20}$	$3\frac{1}{2}$	
110	17	4	$1\frac{1}{2}$	$8^{16}$	$4\frac{3}{4}$	
111	23	3	$1\frac{1}{4}$	$9^{20}$	$3\frac{3}{4}$	
112	25	$2\frac{1}{2}$	$1\frac{1}{16}$	$8^{50}$	3	
113	28	$2\frac{1}{2}$	$1\frac{1}{16}$	$9^{52}$	3	
114	16	$2\frac{1}{2}$	$1\frac{1}{8}$	$5^{76}$	$3\frac{1}{4}$	

\* Long teeth. † Odontograph tooth made to dress both sides.

## Spur Segments &amp; Pinions.

No. Pattern.	No. Teeth	Face.	Pitch.	Diameter.	No. of Segment.	No. of Teeth in each.	Weight.
No.	Teeth.	Inch.	Inch.	Inch.			lbs.
1	264	8	2	168 <sup>96</sup>	22	12	
	45	8	2	28 <sup>80</sup>			
2	165	8	2	105 <sup>60</sup>	15	11	
	45	8	2	28 <sup>80</sup>			
3	319	8	2 <sup>3</sup> / <sub>8</sub>	242 <sup>44</sup>	29	11	
	45	8	2 <sup>3</sup> / <sub>8</sub>	34 <sup>20</sup>			
4	238	7	2 <sup>1</sup> / <sub>4</sub>	171 <sup>36</sup>	17	14	
	43	7	2 <sup>1</sup> / <sub>4</sub>	30 <sup>96</sup>			
5	494	8	2	316 <sup>66</sup>	26	19	
	45	8	2	28 <sup>80</sup>			
*6	285	6	2 <sup>3</sup> / <sub>8</sub>	216 <sup>60</sup>	19	15	
	45	6	2 <sup>3</sup> / <sub>8</sub>	34 <sup>20</sup>			
7	99	6	2 <sup>3</sup> / <sub>8</sub>	75 <sup>24</sup>	9	11	
	45	6	2 <sup>3</sup> / <sub>8</sub>	34 <sup>20</sup>			
8	190	5	2 <sup>3</sup> / <sub>8</sub>	144 <sup>4</sup>	19	10	
	45	5	2 <sup>3</sup> / <sub>8</sub>	34 <sup>20</sup>			
9	360	8	2 <sup>1</sup> / <sub>4</sub>	259 <sup>20</sup>	30	12	
	43	8	2 <sup>1</sup> / <sub>4</sub>	30 <sup>96</sup>			
10	192	8	2	122 <sup>88</sup>	12	16	
	45	8	2	28 <sup>80</sup>			
11	630	8	2	403 <sup>20</sup>	42	15	
	45	8	2	28 <sup>80</sup>			
12	132	1 <sup>1</sup> / <sub>2</sub>	3 <sup>3</sup> / <sub>4</sub>	31 <sup>68</sup>	4	33	
	13	1 <sup>1</sup> / <sub>2</sub>	3 <sup>3</sup> / <sub>4</sub>	3 <sup>12</sup>			
13	165	8	2	105 <sup>60</sup>	15	11	
	56	8	2	35 <sup>84</sup>			
14	216	2 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>4</sub>	86 <sup>40</sup>	9	24	
	228	4	1 <sup>1</sup> / <sub>2</sub>	109 <sup>44</sup>	12	19	
16	696	7	2 <sup>1</sup> / <sub>4</sub>	501 <sup>12</sup>	24	29	
17	360	8	2	230 <sup>40</sup>	20	18	

\* Concentric, or Teeth inside.

† Flanges.

‡ Works in Spur Core.

## Spur Segments and Pinions.

Pattern.	No. Teeth.	Face.	Pitch.	Diameter.	No. of Segment.	No. of Teeth in each.	Weight.
No.	Teeth.	Inch.	Inch.	Inch.			Lbs.
18 {	162	2 $\frac{1}{2}$	1	51 <sup>84</sup>	6	27	
	13	2 $\frac{1}{2}$	1	4 <sup>26</sup>			
19 {	200	8	2	128	10	20	
	47	8	2	30 <sup>08</sup>			
20 {	360	6	2 $\frac{1}{4}$	259 <sup>20</sup>	30	12	
	43	6	2 $\frac{1}{4}$	30 <sup>96</sup>			
21 {	364	8	2	232 <sup>96</sup>	26	14	
	45	8	2	28 <sup>80</sup>			

## Bevel Segments and Pinions.

No.	No. Pattern.	No. Teeth.	Face.	Pitch.	Diameter.	Backing.	No. of Segment.	No. of Teeth in each.	Weight. Lbs.
		Teeth.	Inch.	Inch.	Inch.	Inch.			
1	168	6	2	107 <sup>52</sup>	12	14	12	14	
	40	6	2	25 <sup>60</sup>					
2	120	6	2 <sup>1</sup> <sub>4</sub>	86 <sup>40</sup>	8	15	8	15	
	35	6	2 <sup>1</sup> <sub>4</sub>	25 <sup>20</sup>					
3	225	8	2 <sup>1</sup> <sub>8</sub>	153	15	15	15	15	
	45	8	2 <sup>1</sup> <sub>8</sub>	30 <sup>60</sup>					
4	308	3 <sup>1</sup> <sub>2</sub>	2	197 <sup>12</sup>	28	11	28	11	
	11	3 <sup>1</sup> <sub>2</sub>	2	7 <sup>04</sup>					
5	225	7	2	144	15	15	15	15	
	38	7	2	24 <sup>32</sup>					
6	144	10	2 <sup>3</sup> <sub>4</sub>	126 <sup>72</sup>	12	12	12	12	
	34	10	2 <sup>3</sup> <sub>4</sub>	29 <sup>92</sup>					

## Spur Pinions and Racks.

No. Pattern.	No. of Teeth.	Face.	Pitch.	Diameter.	Length of Segments.	Weight.
No.	Teeth.	Inch.	Inch.	Inch.	Inch.	lbs.
1	36	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2 <sup>88</sup>	27	
	12	1 $\frac{1}{2}$	1 $\frac{1}{2}$			
	32	1 $\frac{1}{2}$	1 $\frac{1}{2}$		24	
*	33	1 $\frac{3}{4}$	1 $\frac{3}{4}$		28 <sup>87</sup>	
*	13	1 $\frac{3}{4}$	1 $\frac{3}{4}$	3 <sup>64</sup>		
*	29	1 $\frac{1}{2}$	1 $\frac{1}{2}$	4 <sup>76</sup>	25 <sup>37</sup>	
*	17	1 $\frac{1}{2}$	1 $\frac{1}{2}$	5 <sup>12</sup>		
*	16	2	1		36	
4	36	2	1		33 <sup>25</sup>	
5	24	3 $\frac{1}{2}$	1 $\frac{3}{8}$	6 <sup>16</sup>	Flanges.	
5	14	3 $\frac{1}{2}$	1 $\frac{3}{8}$		25	
6	20	3	1 $\frac{1}{4}$	5 <sup>60</sup>		
6	14	3	1 $\frac{1}{4}$	2 <sup>64</sup>		
7	11	2	1 $\frac{3}{4}$			
7	38	1 $\frac{1}{2}$	1 $\frac{3}{4}$		28 $\frac{1}{2}$	
*	20	2	1	6 <sup>40</sup>		
*	36	2	1		36	
9	14	1 $\frac{1}{2}$	1 $\frac{3}{4}$	3 <sup>36</sup>		
*	10	14	1 $\frac{3}{4}$	4 <sup>48</sup>		

\* Round Teeth.

## Hand or Fly Wheels.

No. Pattern.	Diameter.	Diameter of Rim.	No. of Arms.	Weight.
No.	Inch.	Inch.	Inch.	lbs.
1	42	2 $\frac{1}{2}$	4	
2	36	1 $\frac{1}{2}$	4	
3	24	1 $\frac{3}{4}$	6	
4	18	1 $\frac{1}{8}$	6	
5	12	1 $\frac{1}{4}$	4	
6	9 $\frac{1}{2}$	1	4	
7	8 $\frac{1}{2}$	1 $\frac{1}{4}$	4	
8	23	1 $\frac{5}{8}$	6	
9	7	3 $\frac{7}{8}$	Plate.	
10	6	3 $\frac{3}{4}$	4	
11	30	1 $\frac{1}{2}$	4	
12	12	1 $\frac{3}{8}$	4	
13	54	4	4	
14	96	5x5	6	Arms 2 $\frac{1}{4}$ Wrought Iron.
15	8	1	4	
16	24	1 $\frac{1}{2}$	6	
17	15	1 $\frac{1}{4}$	4	

## Pulley Patterns.

Pulley Patterns described fully, with the width of face, are made in two parts, with *swell face*, so that the casting can be used without turning.

Patterns described only by diameter, without the face being given, can be ordered of any desired face. The castings being *straight face* are intended to be turned.

Diameter. Inch.	Face. Inch.	Weight. Lbs.	Diameter. Inch.	Face. Inch.	Weight. Lbs.	Diameter. Inch.	Face. Inch.	Weight. Lbs.
90	38		64			54		
90			64			54		
90			64			54		
90			64			52		
90			63			52		
84			63.			52		
84			63			52		
84			63			52		
84			63			50		
84			62			50		
82			62			50		
82			62			50		
82			62			50		
82			62			48		20
82			60			48		
78	Any.		60			48		
78			60			48		
78			60			48		
78			60			46		
78			57			46		
76			57			46		
76			57			46		
76			57			46		
76			55			45		
72			55			45		
72			55			45		
72			55			45		
72			55			44		
72			54			44		
64			54			44		

## Pulley Patterns.

Diameter.	Face.	Weight.	Diameter.	Face.	Weight.	Diameter.	Face.	Weight.
Inch.	Inch.	Lbs.	Inch.	Inch.	Lbs.	Inch.	Inch.	Lbs.
44			34	Any.		30		
44			34			30		
42			34			30		
42			34			30		
42			34			30		
42			34			29		
42			34			29		
41			34			29		
41			34			29		
41			34			29		
41			34			29		
40	20 $\frac{1}{2}$		33			29		
40			33			29		
40			33			29		
40			33			29		
40			33			28		
38			33			28		
38			33			28		
38			33			28		
38			33			28		
38			33			28		
38			32			28		
38			32			28		
38			32			28		
38			32			28		
38			32			27		
36			32			27		
36	10 $\frac{1}{2}$		32			27		10 $\frac{1}{2}$
36	8 $\frac{1}{2}$		32			27		9 $\frac{1}{2}$
36			32			27		7 $\frac{1}{2}$
36			30			27		
36			30	10 $\frac{1}{2}$		27		
36			30	8 $\frac{1}{2}$		27		
36			30	7 $\frac{1}{2}$		27		
36			30			27		
36			30			27		
36			30			26		

## Pulley Patterns.

Diameter. Inch.	Face. Inch.	Weight. Lbs.	Diameter. Inch.	Face. Inch.	Weight. Lbs.	Diameter. Inch.	Face. Inch.	Weight. Lbs.
26			23			19		
26	8 $\frac{1}{2}$		23			19		
26	6 $\frac{1}{2}$		23			19		
26	5 $\frac{1}{2}$		22	5 $\frac{1}{2}$		19		
26			22	4 $\frac{1}{2}$		19		
26			22			19		
26			22			19		
26			22			19		
25			22			19		
25			22			18		
25			22			18		
25			21			18		
25			21			18		
25			21			18		
25			21			18		
25			21			18		
25			21			18		
24	10 $\frac{1}{2}$		21			18		
24	9 $\frac{1}{2}$		21			17		
24	7 $\frac{1}{2}$		21			17		
24	6 $\frac{1}{2}$		21			17		
24	6		20	10 $\frac{1}{2}$		17		
24	5 $\frac{1}{2}$		20	9 $\frac{1}{2}$		17		
24	5		20	8 $\frac{1}{2}$		17		
24	4 $\frac{1}{2}$		20	7 $\frac{1}{2}$		17		
24			20			17		
23			20	6 $\frac{1}{2}$		17		
23			20	6		16		
23			20	5 $\frac{1}{2}$		16		
23			20	4 $\frac{1}{2}$		16		
23			20	4		16		
23			20	3		16		

## Pulley Patterns.

Diameter.	Face.	Weight.	Diameter.	Face.	Weight.	Diameter.	Face.	Weight.
Inch.	Inch.	Lbs.	Inch.	Inch.	Lbs.	Inch.	Inch.	Lbs.
16	4 $\frac{1}{2}$		12	8 $\frac{1}{2}$		9	9	
16			12			9	9	
16			12			9	9	
16			12			9	9	
16			12			8 $\frac{1}{2}$	8 $\frac{1}{2}$	
15	Any.		12	4 $\frac{1}{2}$		8 $\frac{1}{2}$	8 $\frac{1}{2}$	
15	8 $\frac{1}{2}$		12	3		7 $\frac{1}{2}$	7 $\frac{1}{2}$	
15	6 $\frac{1}{2}$		12		6 $\frac{1}{4}$	7	7	
15	5 $\frac{1}{2}$		11			7	6	
15	4 $\frac{1}{2}$		11			7	5	
15			11			7	4 $\frac{1}{2}$	
15			11			6 $\frac{1}{2}$	6 $\frac{1}{2}$	
15			11			6 $\frac{1}{2}$	6 $\frac{1}{2}$	
14			11			6 $\frac{1}{2}$	6 $\frac{1}{2}$	
14			10			6 $\frac{1}{2}$	6 $\frac{1}{2}$	
14			10			6 $\frac{1}{2}$	6 $\frac{1}{2}$	
14			10			6 $\frac{1}{2}$	6 $\frac{1}{2}$	
14			10			6 $\frac{1}{2}$	6 $\frac{1}{2}$	
14			10			6 $\frac{1}{2}$	6 $\frac{1}{2}$	
14			10			6 $\frac{1}{2}$	6 $\frac{1}{2}$	
14			10			6 $\frac{1}{2}$	6 $\frac{1}{2}$	
14			10			6 $\frac{1}{2}$	6 $\frac{1}{2}$	
14			10			6 $\frac{1}{2}$	6 $\frac{1}{2}$	
14			10			6 $\frac{1}{2}$	6 $\frac{1}{2}$	
14			10			6 $\frac{1}{2}$	6 $\frac{1}{2}$	
14			10			6 $\frac{1}{2}$	6 $\frac{1}{2}$	
14			10			6 $\frac{1}{2}$	6 $\frac{1}{2}$	
14			10			6 $\frac{1}{2}$	6 $\frac{1}{2}$	
13	4 $\frac{1}{2}$		10	2 $\frac{1}{4}$		6 $\frac{1}{2}$	6 $\frac{1}{2}$	
13			10	6		6 $\frac{1}{2}$	6 $\frac{1}{2}$	
13			10	4 $\frac{1}{2}$		6 $\frac{1}{2}$	6 $\frac{1}{2}$	
13			9	6		6 $\frac{1}{2}$	6 $\frac{1}{2}$	
13			9	6		6 $\frac{1}{2}$	6 $\frac{1}{2}$	
13			9	6		6 $\frac{1}{2}$	6 $\frac{1}{2}$	
13			9	6		6 $\frac{1}{2}$	6 $\frac{1}{2}$	
13			9	6		6 $\frac{1}{2}$	6 $\frac{1}{2}$	
13			9	6		6 $\frac{1}{2}$	6 $\frac{1}{2}$	
13			9	6		6 $\frac{1}{2}$	6 $\frac{1}{2}$	
13			9	6		6 $\frac{1}{2}$	6 $\frac{1}{2}$	
13			9	6		6 $\frac{1}{2}$	6 $\frac{1}{2}$	
13			9	6		6 $\frac{1}{2}$	6 $\frac{1}{2}$	
13			9	6		6 $\frac{1}{2}$	6 $\frac{1}{2}$	
13			9	6		6 $\frac{1}{2}$	6 $\frac{1}{2}$	
13			9	6		6 $\frac{1}{2}$	6 $\frac{1}{2}$	
13			9	6		6 $\frac{1}{2}$	6 $\frac{1}{2}$	
13			9	6		6 $\frac{1}{2}$	6 $\frac{1}{2}$	
13			9	6		6 $\frac{1}{2}$	6 $\frac{1}{2}$	
13			9	6		6 $\frac{1}{2}$	6 $\frac{1}{2}$	
13			9	6		6 $\frac{1}{2}$	6 $\frac{1}{2}$	
12	3 $\frac{1}{2}$		9	6		6 $\frac{1}{2}$	6 $\frac{1}{2}$	

## Pulley Patterns.

## Cast Iron Conveyors.

No. Pattern.	Diameter.	
No.	Inch.	
1	12	Right hand like an Auger,
2	12	Left " contrary
3	9	Right " like an Auger,
4	9	Left " contrary,
5	6	Right " like an Auger,
6	6	Left " contrary.
		Used for conveying Grain, and in Tanneries for conveying Bark, &c. Give length over all.
1 {	48	Rope Wheel, 18 prongs.
2 {	24	Check Wheel, $2\frac{3}{4}$ face.
1 {	10	Barrel Flange.
2 {	12	" "
1 {	24	Concave Friction Pulley.
1 {	24	Convex " "
1 {	18	Convex Friction Pulley.
2 {	24	Concave " "

## Cast Iron Conveyor Spirals.

Pattern.	Outside Diam.	Diam. of Shaft.	Pitch of Screw.	Right Hand means like an Auger.
A	12	6	9	Right and Left.
B	$11\frac{1}{2}$	6	9	" " "
C	10	5	8	" " "
D	9	4	7	" " "
E	11	$5\frac{1}{2}$	9	" " "
F	14	7	9	" " "
G	14	7	12	" " "

## Weight of Round Rolled Iron.

From  $\frac{1}{16}$  Inch to 10 Inches Diameter.

Diameter.	Weight.	Diameter.	Weight.	Diameter.	Weight.
Inch.	Lbs.	Inch.	Lbs.	Inch.	Lbs.
$\frac{1}{16}$	.01	8	170.		
$\frac{1}{8}$	.041	$\frac{1}{4}$	180.7		
$\frac{1}{4}$	.165	$\frac{1}{2}$	191.8		
$\frac{1}{2}$	.663	$\frac{3}{4}$	203.26		
$\frac{3}{4}$	1.492	9	215.05		
1	2.654	$\frac{1}{4}$	227.18		
$\frac{1}{4}$	4.147	$\frac{1}{2}$	239.6		
$\frac{1}{2}$	5.975	$\frac{3}{4}$	252.38		
$\frac{3}{4}$	8.130	10	265.5		
2	10.616				
$\frac{1}{4}$	13.45				
$\frac{1}{2}$	16.588				
$\frac{3}{4}$	20.076				
3	23.888				
$\frac{1}{4}$	28.04				
$\frac{1}{2}$	32.52				
$\frac{3}{4}$	37.333				
4	42.464				
$\frac{1}{4}$	48.				
$\frac{1}{2}$	53.76				
$1\frac{1}{4}$	59.1				
5	66.35				
$\frac{1}{4}$	73.172				
$\frac{1}{2}$	80.304				
$\frac{3}{4}$	87.777				
6	95.56				
$\frac{1}{4}$	103.705				
$\frac{1}{2}$	112.2				
$\frac{3}{4}$	121.				
7	130.05				
$\frac{1}{4}$	139.6				
$\frac{1}{2}$	149.33				
$\frac{3}{4}$	159.46				

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